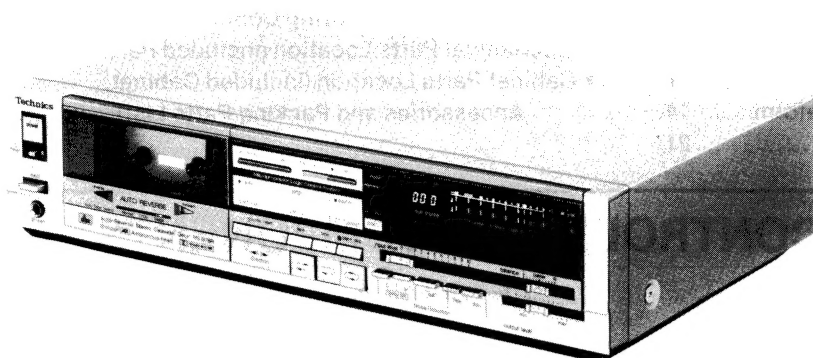


Service Manual

Cassette Deck

RS-B78R

 (Silver Face)
 (Black Face)

dbx/Dolby B-C NR, Auto-Reverse
 Cassette Deck

 This is the Service Manual
 for the following areas.

- D** ...For all European areas except United Kingdom.
- B** ...For United Kingdom.
- N** ...For Asia, Latin America, Middle East and Africa areas.
- A** ...For Australia.

RS-8R MECHANISM SERIES

Specifications

| | | | |
|-------------------------------|--|-------------------------------|---|
| Track system: | 4-track 2-channel stereo recording and playback | Fast forward and rewind time: | Approx. 90 seconds with C-60 cassette tape |
| Tape speed: | 4.8cm/s | Inputs: | MIC; sensitivity 0.25mV, applicable microphone impedance 400Ω~10kΩ |
| Wow and flutter: | 0.045% (WRMS), ±0.14% (DIN) | | LINE; sensitivity 60mV, input impedance 47kΩ or more |
| Frequency response: | Metal tape; 20~20,000Hz 30~19,000Hz (DIN) 40~18,000Hz ±3dB | Outputs: | LINE; output level 700mV, output impedance 800Ω or less |
| | CrO ₂ tape; 20~19,000Hz 30~18,000Hz (DIN) 40~17,000Hz ±3dB | | HEADPHONES; output level 125mV (at 8Ω) applicable headphone impedance 8Ω~600Ω |
| | Normal tape; 20~18,000Hz 30~17,000Hz (DIN) 40~16,000Hz ±3dB | Bias frequency: | 80kHz |
| Dynamic range: | 110dB (at 1kHz) with dbx in | Heads: | 1-AX (AMORPHOUS) head for rec/playback |
| Max. input level improvement: | 10dB or more improved with dbx in (at 1kHz) | | 2-double-gap ferrite head for erasure |
| Signal-to-noise ratio: | dbx in; 92dB (A weighted) Dolby C NR in; 75dB (CCIR) Dolby B NR in; 68dB (CCIR) NR out; 58dB (A weighted) (Signal level = max. input level CrO ₂ type tape) | Motor: | 3-motor system One for capstan drive (Electrical governor motor) One for reeltable drive (DC motor) One for mechanism drive (DC motor) |

Technics

 Matsushita Electric Trading Co., Ltd.
 P.O. Box 288, Central Osaka Japan

Power

requirements: AC; 110/125/220/240V, 50-60Hz

□...Pre-set power voltage 220V

□N□A...Pre-set power voltage 240V

Power

consumption: 25W

Dimensions: 43cm(W)×9.8cm(H)×27.3cm(D)

Weight: 5.3kg

Design and specifications are subject to change without notice.

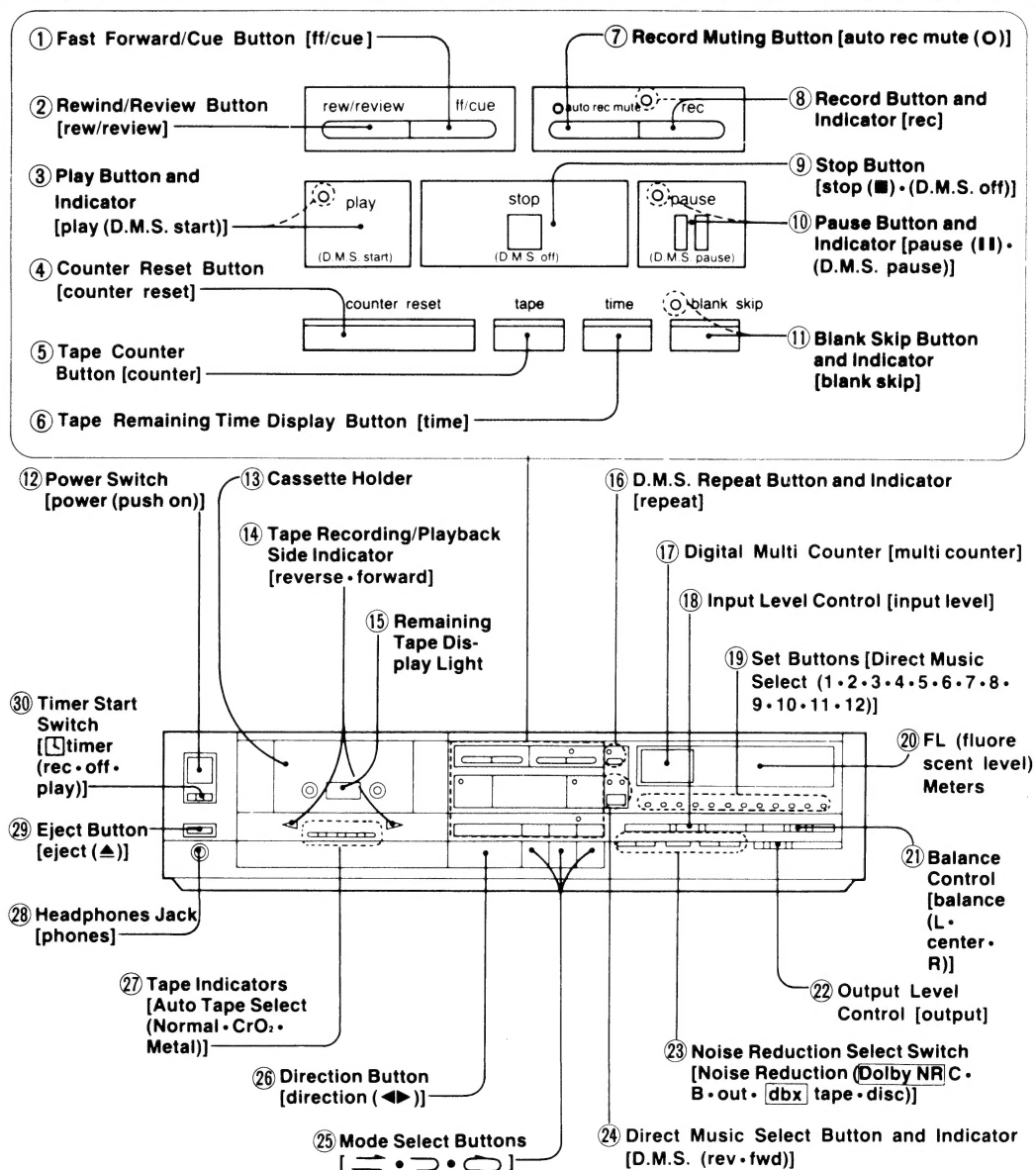
*The term dbx is a registered trademark of dbx Inc.

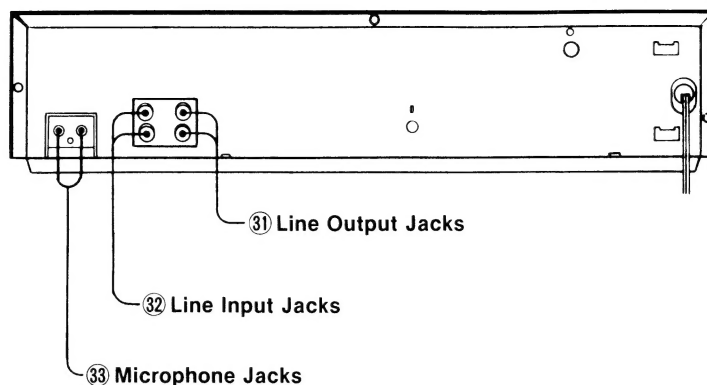
** 'Dolby' and the double-D symbol are trademarks of Dolby Laboratories Licensing Corporation.

CONTENTS

| ITEM | PAGE | ITEM | PAGE |
|--|------|--|------|
| • Location of Controls and Components | 2 | • Schematic Diagram (for Main/FL meter Section) | 24 |
| • Operating Instruction | 3 | • Schematic Diagram (for Mechanism/ Mechanism Control Section) | 28 |
| • Disassembly Instructions | 4 | • Electrical Parts List | 30 |
| • Precautions in Disassembly and Reassembly | 6 | • Circuit Boards and Wiring Connection Diagram | 33 |
| • Precautions for Parts Replacement | 6 | • Mechanical Parts Location (included Parts List) | 36 |
| • Replacing Rotary Head Assembly | 7 | • Cabinet Parts Location (included Cabinet, Accessories and Packing Parts List) | 37 |
| • Measurement and Adjustment Methods | 7 | | |
| • Microcomputer Terminal Function and Waveform ... | 14 | | |
| • Block Diagram | 21 | | |

LOCATION OF CONTROLS AND COMPONENTS





OPERATING INSTRUCTION

About direct music select function

After searching for the beginning of your desired programs, the unit will begin playback automatically.

1. Select the playback side

Each time the Direct Music Select Button is pressed, the unit will switch between forward and reverse playback. (The Forward or Reverse Indicator will light in the respective modes).

2. Select the programs

Press the Set Buttons of the programs you wish to hear (the buttons pressed will light).

- Programs are always counted from the beginning of the tape, first program, second program...etc.
- If the first program is set, the tape will automatically rewind to the beginning and enter the stop mode.
- If a button is pressed by mistake, pressing it once more will release it (its light goes out).

To listen to the 5th, 9th, and 2nd programs from the tape's beginning:

Press Set Button 5, 9, and 2 in that order.

To listen to set programs repeatedly:

If the D.M.S. Repeat Button is pressed, the set programs will be played back repeatedly (the D.M.S. Repeat Indicator will light, indicating that the D.M.S. repeat function is operating).

3. Begin playback

When the Play Button is pressed, the set programs will begin playback. (Programs not set will be skipped over automatically by the fast forward and rewind functions).

To cancel direct music select:

Press the Stop Button.

To cancel D.M.S. repeat:

Press the D.M.S. Repeat Button once again (the D.M.S. Repeat Indicator goes out).

Notes:

- During D.M.S. repeat playback, the unit will playback repeatedly a maximum of 16 times unless the Stop Button is pressed earlier.
- Playback in the direct music select mode is in the order in which the Set Buttons are pressed.
- Use the cassette tape's index card to note the names and order of programs recorded; this makes use of the Set Buttons more convenient.
- This may not operate correctly with the following kinds of tape: programs with passages of extremely low volume level, music tapes with non-recorded passages, recordings with sections of fade-in or fade-out recording.
- Unrecorded blanks of about 4 seconds in length between the program must be created in order for the music selector function to work properly.
The function may not work if the blanks are too short.
The function may not work properly with prerecorded music tapes which have passages where the sound level is particularly low or which have passage of unrecorded sound.
- In cases such as classic music, when a low level of sound continues in the program.
- Do not use pause between music pieces during D.M.S. operation. (This may cause erroneous operation for counting of the number of music pieces.)
- On a music tape to be played back with direct music select, there has to be an unrecorded space of at least four seconds between the end of the last tune on the tape and the beginning of the leader tape; if there is not, an operational error may occur.
- Additional settings of song numbers not yet used can be made while D.M.S. playback is in progress.
However, numbers of songs already played-back by D.M.S. should not be re-entered during D.M.S. playback because the next D.M.S. song number will be cancelled each time the select key of a previously played song is pressed.
- Do not cancel D.M.S. playback during about the first 8 seconds of a song to prevent an erroneous operation when D.M.S. playback is used again.
- Check the total number of songs on a cassette before entering song numbers for D.M.S. playback.
If a non-existent song number is entered (for example, song 6 for a cassette side having only 5 songs), the D.M.S. function may not operate properly.
If this occurs, press the stop Button.

DISASSEMBLY INSTRUCTIONS

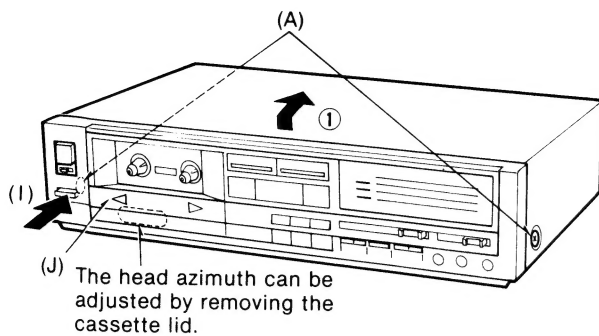


Fig. 1

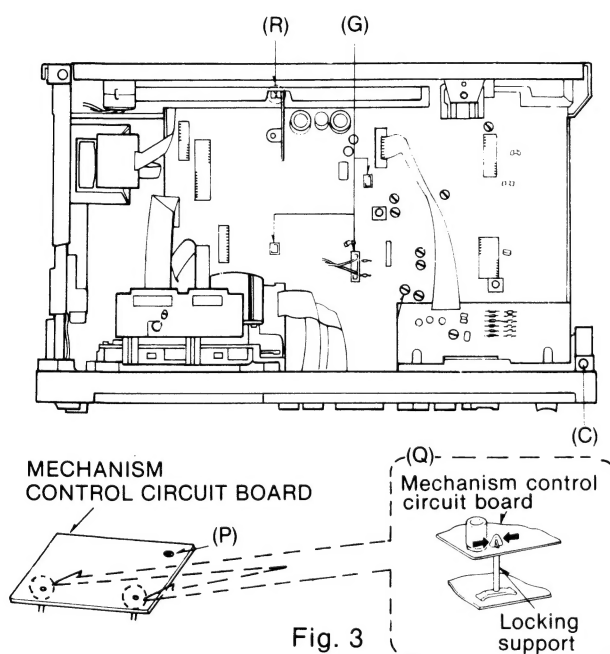
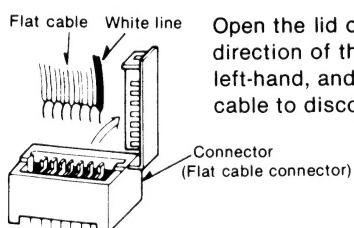


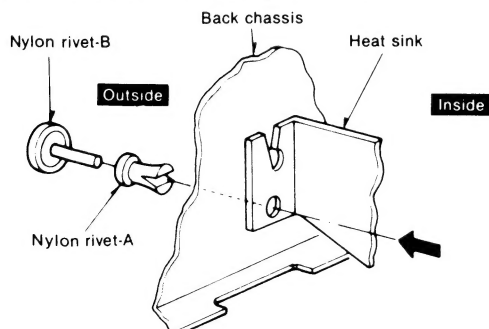
Fig. 3

(H) How to remove flat cable



Open the lid of connector in the direction of the arrow as shown left-hand, and extract the flat cable to disconnect.

(R) How to remove nylon rivet



To remove a heat sink from the back chassis, first press nylon rivet-A from the inside in the direction indicated by the arrow as shown above, and extract the rivet to the outside. Next remove nylon rivet-B from the outside. Consequently, the heat sink can be removed from the back chassis.

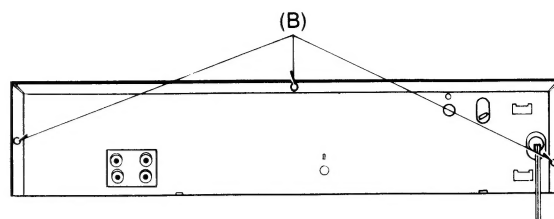


Fig. 2

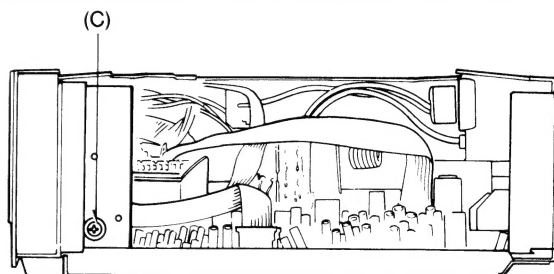


Fig. 4

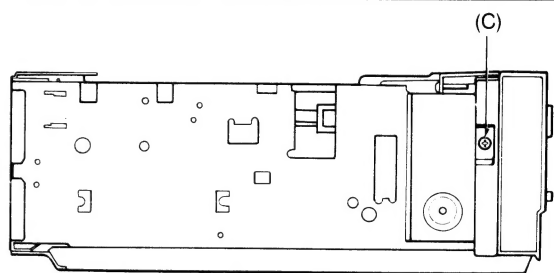


Fig. 5

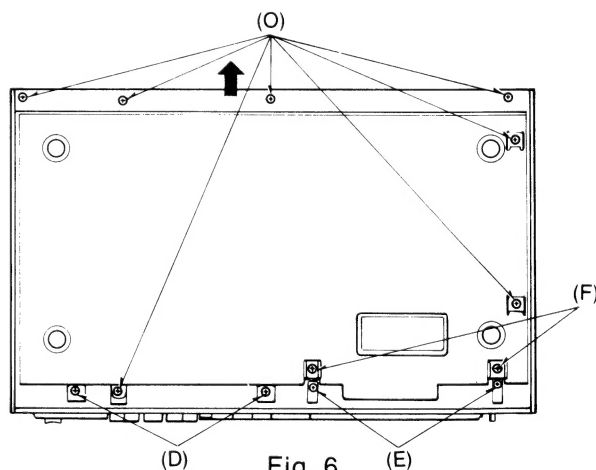


Fig. 6

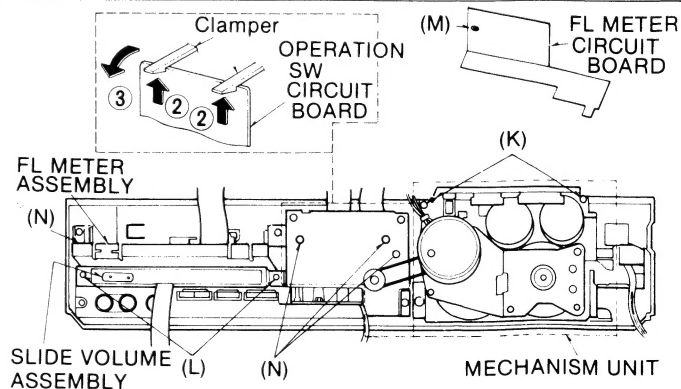


Fig. 7

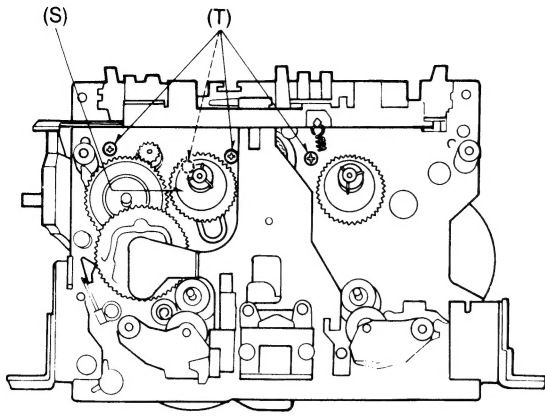


Fig. 8

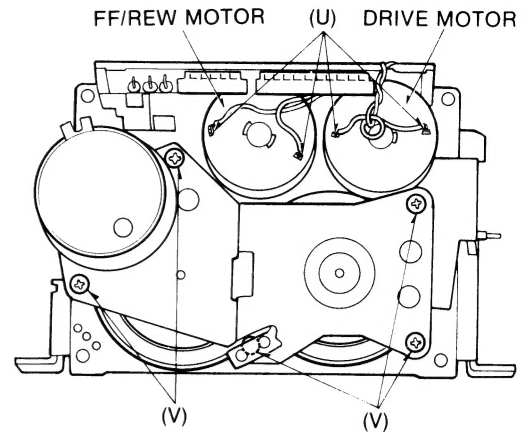


Fig. 9

| Ref. No. | Procedure | To remove —. | Remove —. | Shown in fig. —. |
|----------|---------------|---|---|----------------------------------|
| 1 | 1 | Case cover | <ul style="list-style-type: none"> • 2 ornament screws(A) • 3 screws(B) • As shown in fig. 1, pull case cover in the direction of arrow ①. | 1 2 1 |
| 2 | 1 → 2 | Front panel assembly and mechanism unit | <ul style="list-style-type: none"> • 3 screws(C) • 2 screws(D) • 2 screws(E) • 2 screws(F) • Pull out the connectors A B F G H N O P Q R W 1(G) • How to remove flat cable(H) | 3, 4, 5 6 6 6 3 3 |
| 3 | 1 → 3 | Mechanism unit | <ul style="list-style-type: none"> • Push the eject button(I) • Cassette lid(J) • 2 screws(E) • 2 screws(F) • 2 screws(K) | 1 1 6 6 7 |
| 4 | 1 → 4 | Slide volume assembly | <ul style="list-style-type: none"> • 2 screws(L) | 7 |
| 5 | 1 → 4 → 5 | FL meter circuit | <ul style="list-style-type: none"> • 1 screw(M) • 4 screws(N) • As shown in fig. 7, raise the clumper in the direction of arrow ② and remove the FL meter circuit in the direction of arrow ③. | 7 7 7 |
| 6 | 6 | Bottom cover | <ul style="list-style-type: none"> • 2 screws(D) • 2 screws(F) • 7 screws(O) • Slide the bottom cover in the direction arrow ④ and remove it. | 6 6 6 6 |
| 7 | 1 → 6 → 7 | Mechanism control circuit board | <ul style="list-style-type: none"> • 1 screw(C) • 1 screw(P) • How to remove flat cable(H) • Remove the locking support from the board while pushing its tip in the direction of arrow.(Q) | 4 3 3 3 |
| 8 | 1 → 6 → 7 → 8 | Main circuit board | <ul style="list-style-type: none"> • How to remove nylon ribet(R) | 3 |
| 9 | 1 → 3 → 9 | FF/REW motor and driver motor | <ul style="list-style-type: none"> • Remove the reel table(S) • 4 screws(T) • Un solder the soldered portion of the FF/REW motor terminal and driver motor terminal(U) | 8 8 9 |
| 10 | 1 → 3 → 10 | Capstan motor | <ul style="list-style-type: none"> • 5 screws(V) | 9 |

PRECAUTIONS IN DISASSEMBLY AND REASSEMBLY

Removing the Mode Select Button

The Mode Select Buttons are press-fit with the Button Bushings, as shown in Fig. 10, with the Front Panel Assembly and Button Springs between them. Remove the Button Bushings using pliers to disassemble these parts. Be careful not to lose the Button Springs as they will pop out.

Reassembling the Mechanism Unit

1. For repair, measurement or adjustment with the mechanism removed from the unit be sure to ground the lower base plate of the mechanism.

For grounding, connect an extension cord to the mechanism's lower base plate and the lug terminal from amplifier printed circuit board.

Without grounding, the mechanism does not operate properly. (Refer to Fig. 11).

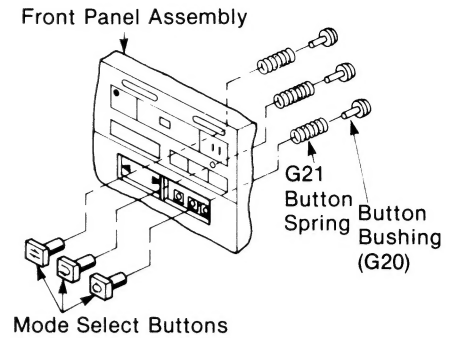


Fig. 10

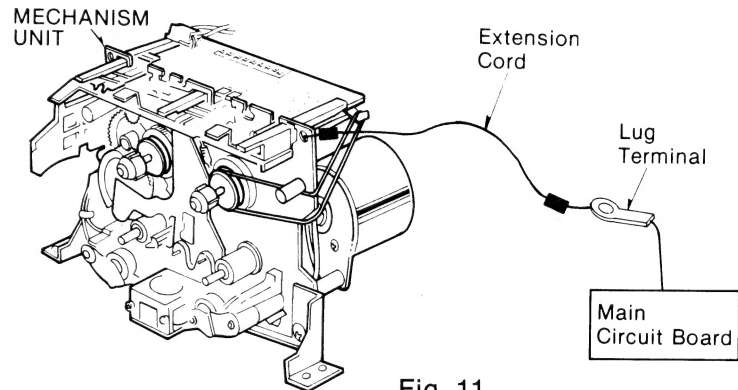


Fig. 11

PRECAUTIONS FOR PARTS REPLACEMENT

Replacement of the Blank Skip/Time/Tape, Counter Reset and DMS (1—12) Buttons.

The Blank Skip, Time Count and Tape Count Buttons are a one-piece resin molded part (It is supplied as a single part.).

As shown in Fig. 1, this buttons are fixed in such a manner that the Front Panel Assembly is sandwiched between the Ornament Plate (G5-1) and the buttons and five pins (A) are melted by heat. (Five pins (B) are used to fix the Ornament Plate. Refer to Fig. 2.)

To remove this part, first, remove the two lugs on the Ornament Plate from the Front Panel. Then, while pulling part (C) of the Ornament Plate toward the front, heat the ten pins (A) and (B) with a soldering iron. (Refer to the Fig. 2.) When the button retainer plate is removed at this time, buttons DMS 1 to 12 can be replaced.

As mentioned above, this part is fixed by melting the pins by heat, both the Ornament Plate and button must be replaced when replacement is required.

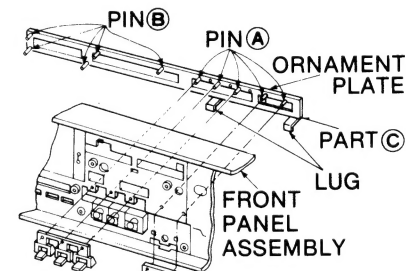
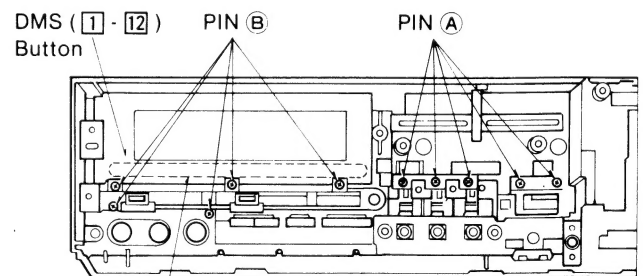


Fig. 1



Button Retainer Plate Fig. 2

Replacement of Parts on the Keyboard Circuit

To replace the parts on the keyboard circuit, first, remove the eight screws (F), and then desolder two terminals (G) of LED's (D519). The Operation Chassis can then be removed from the Base Plate and the parts be replaced. (Refer to Fig. 3).

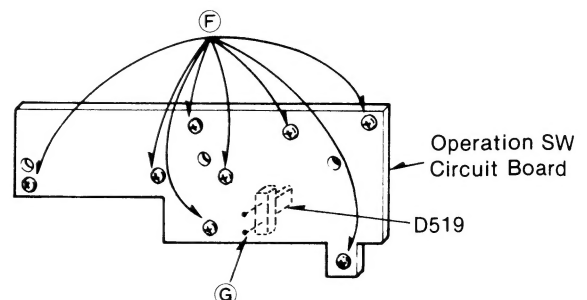


Fig. 3

REPLACING ROTARY HEAD ASSEMBLY

Considerations in mounting the rotary head assembly

1. This recorder requires a record/playback head of extremely precise head height. In replacing the rotary head, install a factory-adjusted full rotary head assembly.
[Never attempt to disassemble the rotary head assembly by removing screws (A).]
2. In installing the replacement rotary head assembly, make certain that the change gear is placed at location (B) on the change rod. (See Fig. 1.)
3. Trace the record/playback head lead-wire as follows (Refer to Fig. 2):
 - Set the record/playback head in its forward stop direction.
 - At this time, hook the head wire to the clasper of the pinch roller R, and press the head wire in the direction of the arrow as shown in Fig. 2 so that it is bent approximately 90 degrees. Then secure the wire on the mechanism unit using a cord clasper.

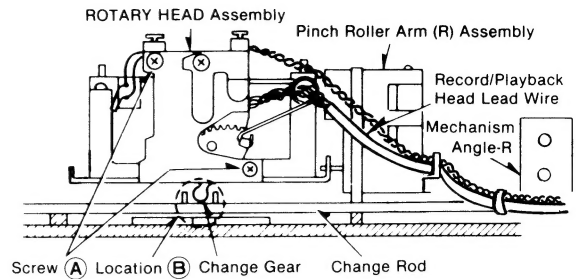


Fig. 1

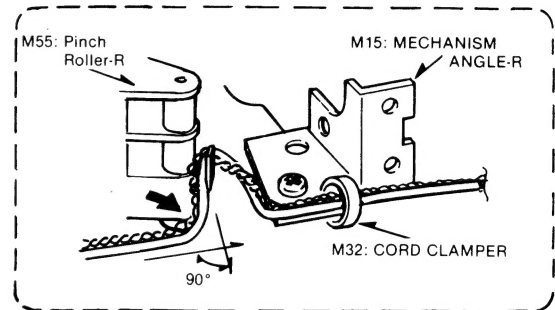


Fig. 2

MEASUREMENT AND ADJUSTMENT METHODS

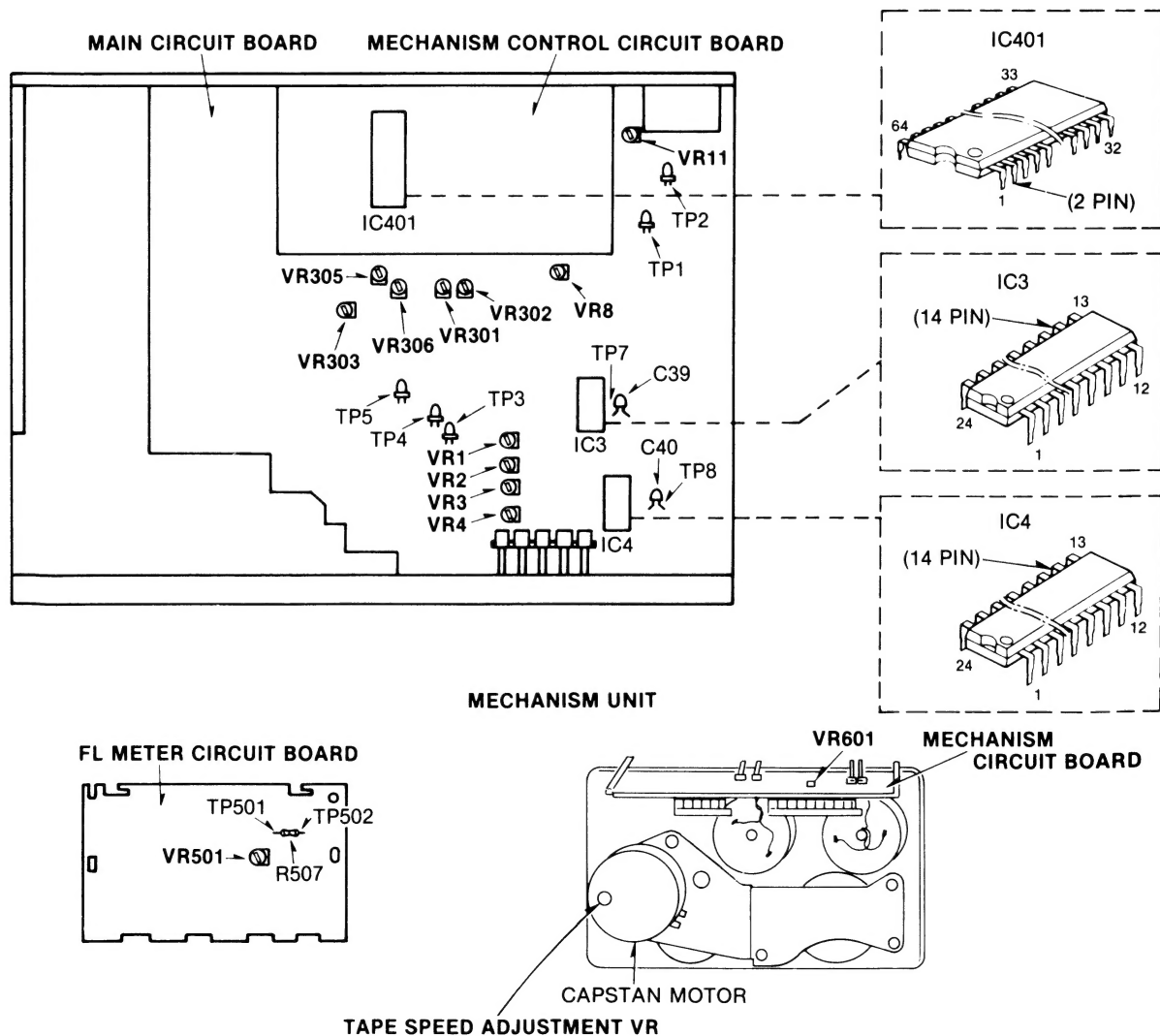



Fig. 1

NOTES: Set switches and controls in the following positions, unless otherwise specified.

- Make sure heads are clean
- Make sure capstan and pressure roller are clean
- Judgeable room temperature $20 \pm 5^\circ\text{C}$ ($68 \pm 9^\circ\text{F}$)
- NR switch: OUT
- Timer start switch: OFF
- Balance control: Center
- Input level control: Maximum
- Output level control: Maximum
- Mode switch:  mode
- Blank skip switch: OFF
- Music select switch: OFF
- Music repeat switch: OFF

A Head adjustment



Condition:

- Playback mode
- (Forward • Reverse)
- Normal tape mode

Equipment:

- VTVM
- Oscilloscope
- Test tape (azimuth)...QZZCFM
- Test tapeQZZCRD

HEAD HEIGHT ADJUSTMENT

1. Turn the erase head height adjustment screws on the rotary head assembly counterclockwise until the upper end face of the erase heads is aligned on the same plane as the top face of their respective guide pins. (Refer to figs. 2 and 3.)
2. Put a point ink-mark on the head of each adjustment screw. 
3. With the marks as guides, turn the erase head height adjustment screw 3.2 turns clockwise. 
4. Install a test tape (tape with mirror: QZZCRD) on the recorder; place the recorder in the FORWARD PLAY mode. Make fine adjustments of the erase head height as necessary, to attain on the record/playback head face the tape position shown in fig. 4.
5. Run the tape in the forward play mode and check it for zigzag running. (Shown in fig. 4) If zigzag tape running occurs, repeat step 4.
6. Place the recorder in the reverse play mode and perform the above steps 4 and 5.
7. Repeat steps 5 and 6 two or three times and verify that the tape position shown in fig. 4 is ensured.

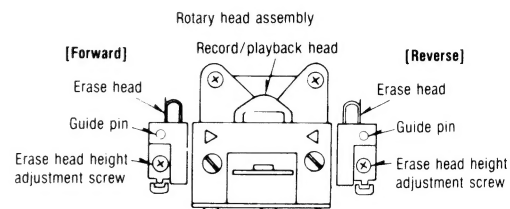


Fig. 2

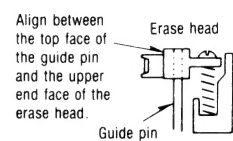


Fig. 3

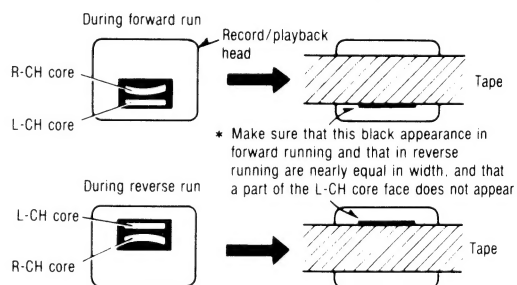


Fig. 4

L-CH/R-CH output balance adjustment

8. Make connections as shown in fig. 5.
9. In the forward playback mode, playback the 8kHz signal from the test tape (QZZCFM). Adjust the azimuth screw (Forward) shown in fig. 6 for maximum output L-CH and R-CH levels. When the output levels of L-CH and R-CH are not at maximum at the same point adjust as follows.
10. Turn the azimuth screw (Forward) shown in fig. 6 to find angles A and C (points where peak output levels for left and right channels are obtained). Then, locate angle B between angles A and C, i.e., point where L-CH and R-CH outputs are balanced. (Refer to figs. 6 and 7.)
11. In the reverse playback mode, adjust the azimuth screw (reverse) in the same way described above.

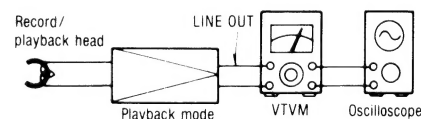


Fig. 5

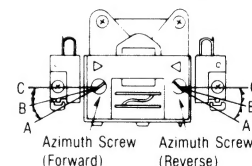


Fig. 6

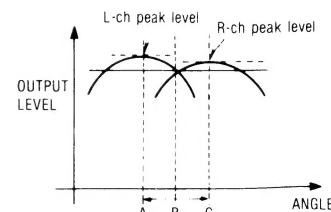


Fig. 7

L-CH/R-CH phase adjustment

12. Make connections as shown in fig. 8.
13. In the forward playback mode, playback the 8kHz signal from the test tape (QZZCFM). Adjust the azimuth screw (Forward) shown in fig. 6 so that pointers of the two VTVMs swing to maximum and a lissajous waveform as illustrated in fig. 9 is obtained on the oscilloscope.
14. In the reverse playback mode, adjust the azimuth screw (reverse) in the same way described above.

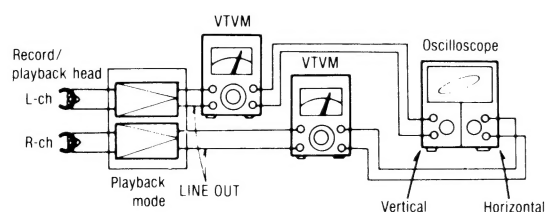


Fig. 8

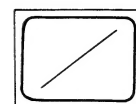


Fig. 9

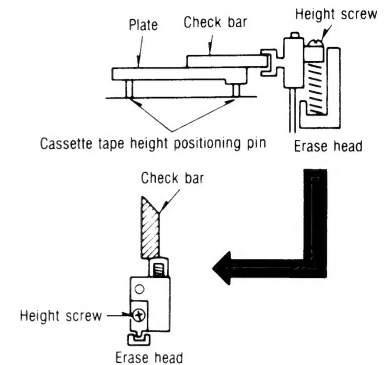
Checking the difference in level between forward and reverse running

15. Reproduce the playback level adjustment signal (315 Hz at 0 dB) on the standard playback adjustment tape; and check that the difference between the level in forward running and that in reverse running is within 1.0 dB.
16. After adjustment, lock the erase head height and angle adjustment screws.

Head Height Adjustment using the Head Adjustment Jig (QZZ0207)

The head adjustment jig (QZZ0207) enables accurate, speedy head height adjustment in the following manner.

- a. Place the plate onto the mechanism.
- b. Set the mechanism to the PLAY mode.
- c. Place the check bar onto the plate.
- d. Pass the check bar through each erase head.
- e. Adjust the height screw so that the check bar does not touch any of the erase heads.
- f. Run a mirror tape (QZZCRD) and check to see that the tape does not touch (twist around, etc.) the erase heads.
- g. After that, adjust items 4 thru 13 in the adjustment procedure.

**㊦ Takeup torque**

Condition:
• Playback mode

Equipment:
• DC voltmeter
• Test tape...QZZSRKCT

1. Set the test tape (or RT-60) into the cassette holder.
2. Adjust the takeup torque adjusting potentiometer VR601 in the forward playback mode for 3.5 volts between the FF/REW motor terminals.
3. Run the QZZSRKCT takeup torque measurement tape in the forward playback mode and check that the torque is within quoted tolerance.

Standard value: 50 ± 10 gr-cm

㊦ Tape speed

Condition:
• Playback mode

Equipment:
• Digital frequency counter
• Test tape...QZZCWAT

Tape speed accuracy

1. Test equipment connection is shown in fig. 10.
2. Playback test tape (QZZCWAT 3,000 Hz), and supply playback signal to the digital frequency counter.
3. Measure this frequency.
4. On the basis of 3,000 Hz, determine value by following formula:

$$\text{Tape speed accuracy} = \frac{f - 3,000}{3,000} \times 100(\%) \quad \text{where, } f = \text{measured value}$$

5. Take measurement at middle section of tape.

Standard value: ± 1.5%

6. If measured value is not within the standard value, adjust it by using the tape speed adjustment VR shown in Fig. 1.

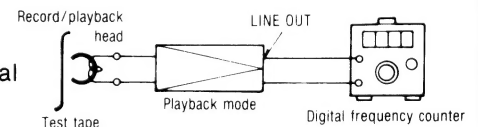


Fig. 10

Tape speed fluctuation

Make measurements in same manner as above (beginning, middle and end of tape), and determine the difference between maximum and minimum values and calculate as follows:

$$\text{Tape speed fluctuation} = \frac{f_1 - f_2}{3,000} \times 100(\%) \quad f_1 = \text{maximum value, } f_2 = \text{minimum value}$$

Standard value: Less than 1%

NOTE:

Please use non metal type screwdriver when you adjust tape speed on this unit.

D Playback frequency response

Condition:

- Playback mode (Forward • Reverse)
- Normal tape mode

Equipment:

- VTVM
- Oscilloscope
- Test tape...QZZCFM

1. Test equipment connection is shown in fig. 5.
2. Playback the frequency response portion of test tape (QZZCFM).
3. Measure output level at 315Hz, 12.5kHz, 8kHz, 4kHz, 1kHz, 250Hz, 125Hz and 63Hz, and compare each output level with the standard frequency 315Hz, at LINE OUT.
4. Make measurements for both channels.
5. Make sure that the measured values are within the range specified in the frequency response chart. (Shown in fig. 11).

Playback frequency response (Forward • Reverse)

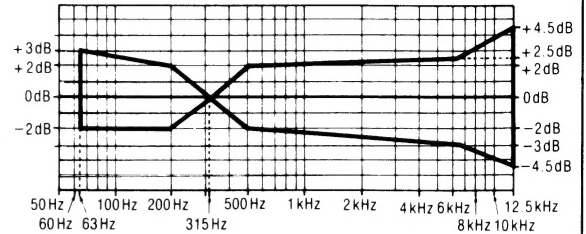


Fig. 11

E Playback gain

Condition:

- Playback mode
- Normal tape mode
- Output level control...MAX.
- Balance control...Center

Equipment:

- VTVM
- Oscilloscope
- Test tape...QZZCFM

1. Test equipment connection is shown in fig. 5.
2. Playback standard recording level portion on test tape (QZZCFM 315Hz) and, using VTVM, measure the output level at test points [TP7 (L-CH), TP8 (R-CH)].
3. Make measurements for both channels.

Standard value: 0.42±0.05V [around 0.28V: at test points TP7 (L-CH) and TP8 (R-CH)]

Adjustment

1. If the measured value is not within standard the adjust VR1 (L-CH) or VR2 (R-CH) (See fig. 1).
2. After adjustment, check "Playback frequency response" again.

F Erase current

Condition:

- Record mode (Forward • Reverse)
- Metal tape mode

Equipment:

- VTVM
- Oscilloscope

1. Test equipment connection is shown in fig. 12.
2. Place UNIT into metal tape mode.
3. Press the record and pause buttons.
4. Read voltage on VTVM and calculate erase current by following formula:

$$\text{Erase current (A)} = \frac{\text{Voltage across resistor R201}}{1 (\Omega)}$$

Standard value: 155±15mA (Metal)

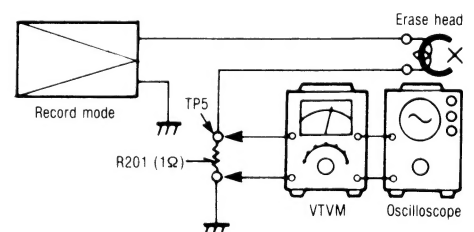


Fig. 12

Adjustment

- If the measured value is not within standard value, adjust VR305 (Forward) or VR306 (Reverse) (See fig. 1).

G Overall frequency response

Condition:

- Record/playback mode (Forward • Reverse)
- Normal tape mode
- CrO₂ tape mode
- Metal tape mode
- Input level control...MAX
- Output level control...MAX
- Balance control...Center

Equipment:

- VTVM
- ATT
- AF oscillator
- Oscilloscope
- Resistor (600Ω)
- Test tape (reference blank tape)
 - ...QZZCRA for Normal
 - ...QZZCRX for CrO₂
 - ...QZZCRZ for Metal

Note:

Before measuring and adjusting, the overall frequency response make sure of the playback frequency response (For the method of measurement, please refer to the playback frequency response).

(Recording equalizer is fixed)

1. Make connections as shown in fig. 13.
2. Place UNIT into normal tape mode and insert the normal reference blank test tape (QZZCRA).
3. Supply a 1kHz signal from the AF oscillator through ATT to LINE IN.
4. Adjust ATT so that input level is -20dB below standard recording level (standard recording level = 0 VU).
5. Adjust the AF oscillator frequency to 1kHz, 50Hz, 100Hz, 200Hz, 500Hz, 4kHz, 8kHz, 10kHz and 12.5kHz signals, and record these signals on the test tape.
6. Playback the signals recorded in step 5, and check if the frequency response curve is within the limits shown in the overall frequency response chart for normal tapes (fig. 14). (If the curve is within the charted specifications, proceed to steps 7, 8 and 9.)
If the curve is not within the charted specifications, adjust as follows;

Adjustment (A):

When the curve exceeds the overall specified frequency response chart (fig. 14) as shown in fig. 15.

- 1) Increase bias current by turning VR301 (L-CH) and VR302 (R-CH). (See fig. 1 on page 7.)
- 2) Repeat steps 5 and 6 for confirmation (Proceed to steps 7, 8 and 9 if the curve is now within the charted specifications as shown fig. 14.)
- 3) If the curve still exceeds the specifications (fig. 14), increase bias current further and repeat steps 5 and 6.

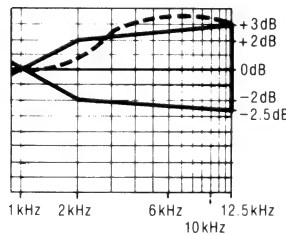


Fig. 15

Adjustment (B):

When the curve falls below the overall specified frequency response chart (fig. 14) as shown in fig. 16.

- 1) Reduce bias current by turning VR301 (L-CH) and VR302 (R-CH).
- 2) Repeat steps 5 and 6 for confirmation (Proceed to steps 7, 8 and 9 if the curve is now within the charted specification as shown fig. 14.)
- 3) If the curve still falls below the charted specifications (fig. 14), reduce bias current further and repeat steps 5 and 6.

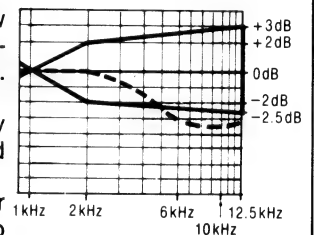


Fig. 16

7. Place UNIT into CrO₂ tape mode.
8. Change test tape to CrO₂ reference blank test tape (QZZCRX), and record 1kHz, 50Hz, 100Hz, 200Hz, 500Hz, 4kHz, 8kHz, 10kHz and 15kHz signals. Then, playback the signals and check if the curve is within the limits shown in the overall frequency response chart for CrO₂ tapes (fig. 17).
9. Place UNIT into metal tape mode and change test tape to metal reference blank test tape (QZZCRZ), and record 1kHz, 50Hz, 100Hz, 200Hz, 500Hz, 4kHz, 8kHz, 10kHz, 12.5kHz and 15kHz signals. Then, playback the signals and check if the curve is within the limits shown in the overall frequency response chart for metal tapes (fig. 17).
10. Confirm that bias currents are approximately as follows when the UNIT is set at different tape mode.
 - Read voltage on VTVM between ground and test point (TP3 for L-CH, TP4 for R-CH) and calculate bias current by following formula:

$$\text{Bias current (A)} = \frac{\text{Value read on VTVM (V)}}{10 (\Omega)}$$

around 200μA (Normal position)
Standard value: around 250μA (CrO₂ position)
around 430μA (Metal position)

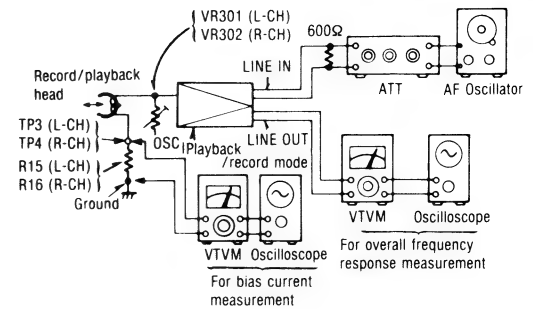


Fig. 13

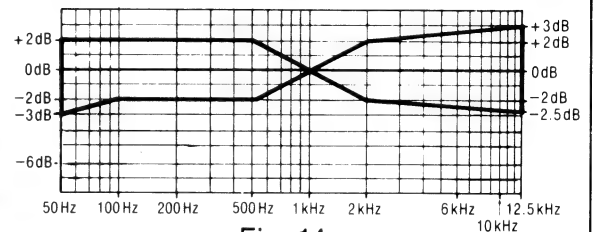
Overall frequency response chart (Normal)

Fig. 14

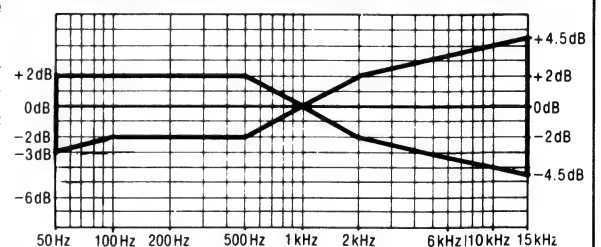
Overall frequency response chart (CrO₂, Metal)

Fig. 17

Ⓜ Overall gain

Condition:

- Record/playback mode (Forward • Reverse)
- Normal tape mode
- Input level control...MAX
- Output level control...MAX
- Balance control...Center
- Standard input level;

MIC $-72 \pm \frac{4}{2}$ dB

LINE IN $-24 \pm \frac{4}{2}$ dB

Equipment:

- VTVM
- ATT
- Resistor (600Ω)
- Test tape (reference blank tape) ...QZZCRA for Normal
- AF oscillator
- Oscilloscope

1. Test equipment connection is shown in fig. 18.
2. Insert the normal reference blank tape (QZZCRA).
3. Place UNIT into record mode.
4. Supply a 1kHz signal through ATT (−24dB) from AF oscillator, to LINE IN.
5. Adjust ATT until monitor level at LINE OUT becomes 0.42V.
6. Playback recorded tape, and make sure that the output level at LINE OUT becomes 0.42V.
7. If measured value is not $0.42V \pm 2dB$, adjust it by using VR3 (L-CH) or VR4 (R-CH).
8. Repeat from step (2).

Standard value: $0.42V \pm 2dB$

[around 0.28V: at test points TP7 (L-CH) and TP8 (R-CH)]

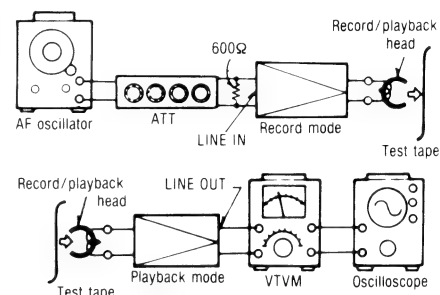


Fig. 18

Ⓜ Dolby NR circuit

Condition:

- Record mode
- Dolby NR switch...IN/OUT
- Dolby NR select switch...B/C
- Input level control...MAX
- Output level control...MAX
- Balance control...Center

Equipment:

- VTVM
- ATT
- Resistor (600Ω)
- AF oscillator
- Oscilloscope

Record side

• Check of the Dolby-B type encoder characteristics

1. Make connections as shown in fig. 19.
2. Set the unit to the record mode. (NR select switch is OUT.)
3. Apply a 1kHz signal to LINE IN.
4. Adjust the ATT so that the output level at TP7 (L-CH) and TP8 (R-CH) is 12.3mV.
5. The output level at pin 14 should also be 12.3mV. (Let 12.3mV = 0dB for this adjustment.)
6. Set the NR select switch to B, and make sure that the output signal level at pin 14 of IC3 (L-CH) and IC4 (R-CH) is $+6dB \pm 2.5dB$.
7. Set the NR select switch to OUT, and adjust the frequency to 5kHz. The output signal level at pin 14 should be 0dB.
8. Set the NR select switch to B and make sure that the output signal level at pin 14 of IC3 (L-CH) and IC4 (R-CH) is $+8dB \pm 2.5dB$.

• Check to Dolby-C type encoder characteristics

9. Repeat steps 1-5 above.
10. Set the NR select switch to C and make sure that the output signal level at pin 14 of IC3 (L-CH) and IC4 (R-CH) is $+11.5dB \pm 2.5dB$.
11. Set the NR select switch to OUT and adjust the frequency to 5kHz. The output signal at pin 14 should be 0dB.
12. Set the NR select switch to C and make sure that the output signal level at pin 14 of IC3 (L-CH) and IC4 (R-CH) is $+8.5dB \pm 2.5dB$.

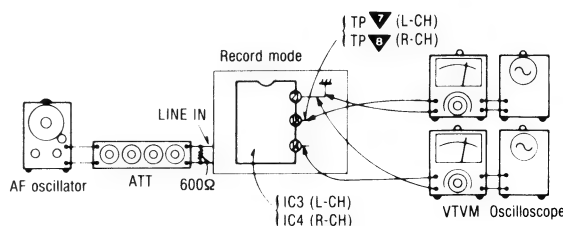


Fig. 19

⑨ **Attack recovery time adjustment (dbx circuit)**

Condition:
 • Record mode
 • Input level control...MAX
 • Noise reduction selector ...dbx tape

Equipment:
 • VTVM
 • ATT
 • AF oscillator
 • DC voltage

1. Make the connections as shown in fig. 20 and apply 1kHz -27dB signal from LINE IN, and set the noise reduction selector to dbx tape position.
2. Set the unit to record mode, adjust ATT so that the signal level at C107 (L-CH) and C108 (R-CH) is 300mV.
3. Read voltage on DC volt meter.

Reference value: $15 \pm 0.5\text{mV}$

4. If measured value is not within reference, adjust VR11 (shown in fig. 1).

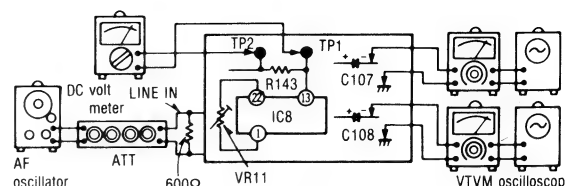


Fig. 20

⑩ **Input scanning time adjustment**

Condition:
 • Stop mode

Equipment:
 • Oscilloscope

1. Place the recorder in the stop mode.
2. Connect an oscilloscope to pin 2 of IC401, as shown in fig. 21.
3. Make sure that the measured values are within the reference value.

Reference value: Approx. 4.6msec.

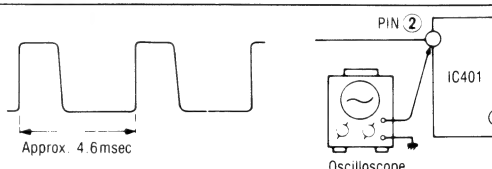


Fig. 21

⑪ **Fluorescent meter**

Condition:
 • Record mode
 • Input level controls...MAX

Equipment:
 • VTVM
 • ATT
 • AF oscillator

• **Check for FL meter**

To check the accuracy of the FL meter, measure the output level at test point [TP7 (L-CH), TP8 (R-CH)].

1. Make connections as shown (See fig. 22).
2. Connect a wire between TP501 and TP502 terminal (See fig. 23).
3. In the recording pause mode, apply 1kHz (-24dB) to LINE IN.
4. Adjust ATT so that output level at test point [TP7 (L-CH), TP8 (R-CH)] is 0.28V.

Checking FL meter 0dB segment display ON/OFF

Change the output level at test point [TP7 (L-CH), TP8 (R-CH)] from 0.28V -1dB ($\approx 250\text{mV}$) to 0.28V +1dB ($\approx 310\text{mV}$) by adjusting the attenuator, and check that the FL meter 0dB segment display OFF state changes to the ON state.

Checking FL meter -40dB segment display ON/OFF

Lower the signal level 28dB below the standard input level (-24dB-28dB=-52dB $\approx 2.5\text{mV}$) and then further lower the level 12dB (-52dB-12dB=-64dB $\approx 0.63\text{mV}$) by adjusting the attenuator. While lowering the level as described above, make sure that only the -40dB display remains lit the dims or goes off at the lowest level.

• **Adjustment for FL meter**

1. Make connections as shown (See fig. 22).
2. Connect a wire between TP501 and TP502 terminal (See fig. 23).
3. In the recording pause mode, apply 1kHz (-24dB) to LINE IN.
4. Adjust ATT so that output level at test point [TP7 (L-CH), TP8 (R-CH)] is 0.28V.

-40dB adjustment

5. Adjust ATT so that the level adjusted at step 4 is reduced by 40dB.
6. At this time, check that -40dB indicator is dimmed (intermediate brightness between full brightness and light-out: See fig. 24).
7. If the indicator is not lighted halfway as described in step 6, adjust VR8.

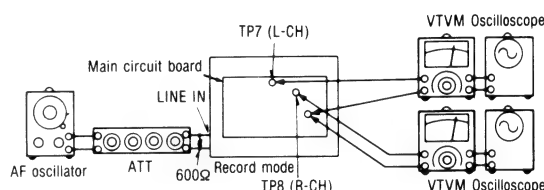


Fig. 22

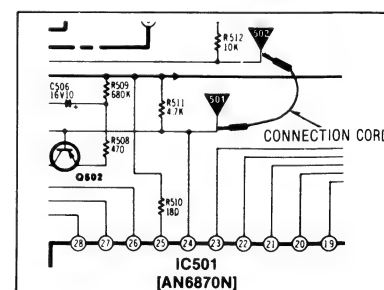


Fig. 23

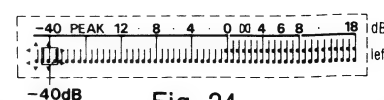


Fig. 24

0dB adjustment

8. Restore the condition of step 4 (set output level to 0.28V at test point [TP7 (L-CH), TP8 (R-CH)]).
9. At this time, check that 0dB indicator is dimmed (intermediate brightness between full brightness and light-out (See fig. 25).
10. If improper, adjust VR501.
11. Repeat adjustments at steps 4, 5, 6, 7, 8, 9 and 10 two or three times.
12. Disconnect the wire between TP501 and TP502 terminal, which had been connected at step 2.



Fig. 25

Photo sensor circuit

Condition:
• Playback mode

NOTE:

When adjusting the photo sensor circuit, leave the front panel, cassette lid and indication plate in place. (External light can cause the photo sensor in the cassette holder to malfunction and makes accurate adjustment impossible.)

Sensitivity adjustment

Some malfunctions, such as tape reverse or auto stop, may sometimes occur during tape travel according to type and make of tape. If the trouble is caused only by tape wrinkles, perform the following adjustments.

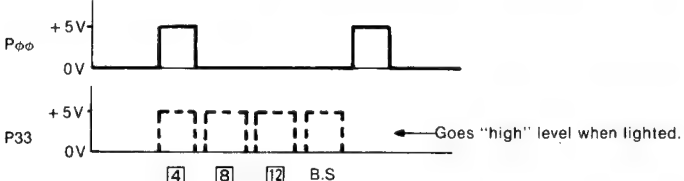
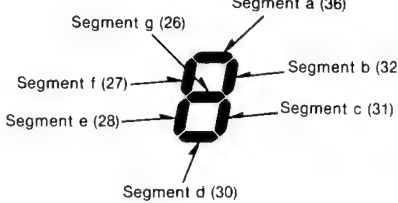
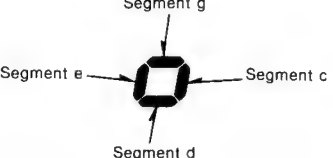
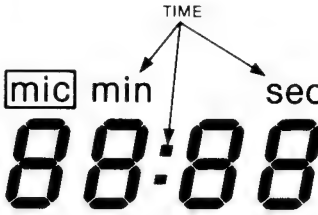
1. While playing the section causing malfunction, adjust VR303 so that normal operation is obtained. (Shown in fig. 1).
2. Then play the leader tape section and check for normal operation (that tape reverse and auto stop are eliminated).

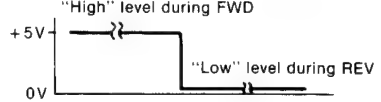
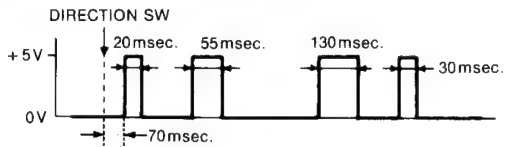
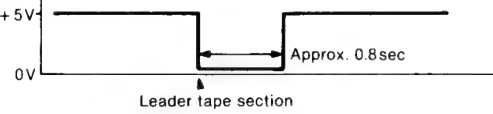
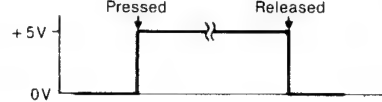


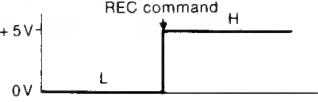
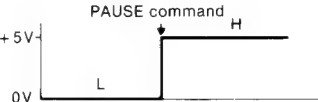
MICROCOMPUTER TERMINAL FUNCTION AND WAVEFORM (IC401: MN1564RME)

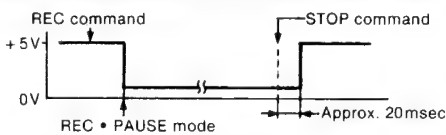
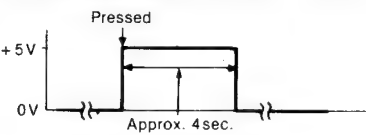
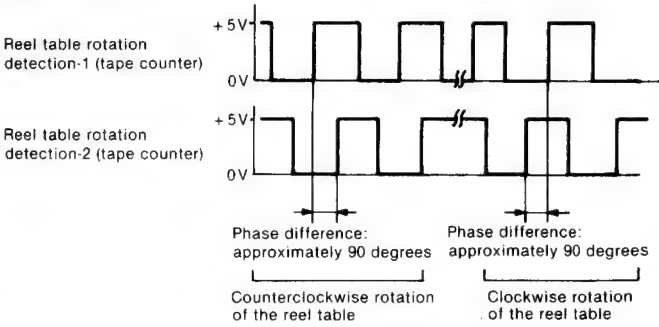
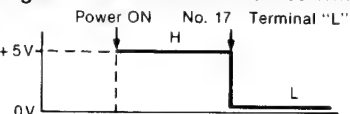
| Terminal No. | Symbol | Name | Function/operation |
|--------------|-------------|---|--|
| 1. | VSS | GND | |
| 2. | $P\phi\phi$ | FL grid & input switch scanning | <p>Pulse width: T_a = Approx. 1.0 msec, T_b = Approx. 80 μsec.</p> |
| 3. | $P\phi 1$ | | |
| 4. | $P\phi 2$ | | |
| 5. | $P\phi 3$ | | |
| 6. | ST0 | _____ | • Non connection. |
| 7. | $P1\phi$ | Reading of input switch state REW • STOP • TIME | <p>• Reads switch inputs corresponding to scanning of $P\phi\phi$ to $P\phi 3$.</p> <p>As each switch is pressed, the corresponding shaded section goes low.</p> |

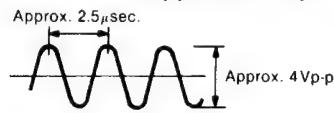
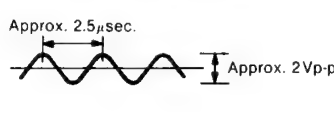
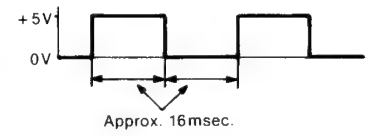
| Terminal No. | Symbol | Name | Function/operation |
|--------------|--------|--|---|
| 8. | P11 | Reading of input switch state FF • PAUSE • TAPE | <ul style="list-style-type: none"> • Reads switch inputs corresponding to scanning of Pφφ to Pφ3. |
| 9. | P12 | Reading of input switch state REC • PLAY • TIMER • COUNTER • RESET | <ul style="list-style-type: none"> • Reads switch inputs corresponding to scanning of Pφφ to Pφ3. |
| 10. | P13 | Reading of input switch state DIR • TIMER REC | |
| 11. | ST1 | _____ | Non connection. SYNC: Output waveforms during operation. |
| 12. | SYNC | _____ | |
| 13. | SIRQ | _____ | |
| 14. | IRQ | _____ | |
| 15. | SBT | _____ | |
| 16. | SBD | _____ | |
| 17. | RST | Reset terminal | <ul style="list-style-type: none"> • Terminal for reset signal to computer. • Automatically reset at not more than 3.5 to 4.0V. |
| 18. | P2φ | Reading of input switch state AUTO REC MUTE • 1 • 5 • 9 | <ul style="list-style-type: none"> • Reads switch inputs corresponding to scanning of Pφφ to Pφ3. |

| Terminal No. | Symbol | Name | Function/operation |
|--------------|--------|---|--|
| 19. | P21 | Reading of input switch state DMS • 2 • 6 • 10 | <ul style="list-style-type: none"> • Reads switch inputs corresponding to scanning of Pφφ to Pφ3. |
| 20. | P22 | Reading of input switch state REPEAT • 3 • 7 • 11 | <ul style="list-style-type: none"> • Reads switch inputs corresponding to scanning of Pφφ to Pφ3. |
| 21. | P23 | Reading of input switch state B.S • 4 • 8 • 12 | <ul style="list-style-type: none"> • Reads switch inputs corresponding to scanning of Pφφ to Pφ3. |
| 22. | P3φ | Dynamic lighting indication FWD • 1 • 5 • 9 LED | <ul style="list-style-type: none"> • Four corresponding LEDs light one at a time in accordance with the scanning of Pφφ to Pφ3. |
| 23. | P31 | Dynamic lighting indication REV • 2 • 6 • 10 LED | <ul style="list-style-type: none"> • Four corresponding LEDs light one at a time in accordance with the scanning of Pφφ to Pφ3. |
| 24. | P32 | Dynamic lighting indication REPEAT • 3 • 7 • 11 LED | <ul style="list-style-type: none"> • Four corresponding LEDs light one at a time in accordance with the scanning of Pφφ to Pφ3. |

| Terminal No. | Symbol | Name | Function/operation |
|--------------|--------------------|---|---|
| 25. | P33 | Dynamic lighting indication B.S. • [4] • [8] • [12] | <ul style="list-style-type: none"> Four corresponding LEDs light one at a time in accordance with the scanning of P$\phi\phi$ to Pϕ3.  |
| 26. | P4 ϕ | FL counter Segment g | <p>— Number indication —</p>  <p>— Running indication —</p>  <p>5V — ON 0V — OFF</p> |
| 27. | P41 | FL counter Segment f | |
| 28. | P42 | FL counter Segment e | |
| 29. | P43 | TIME | |
| 30. | P5 ϕ | FL counter Segment d | |
| 31. | P51 | FL counter Segment c | |
| 32. | P52 | FL counter Segment b | <p>Counter number changes when takeup reel table rotates two turns. Each segment of running indication changes when the reel table rotates a half turn. Waveforms change since dynamic lighting is used.</p> <p>• "min", "sec", and ":" are displayed when the TIME signal is given.</p>  |
| 33. | VDD | Power supply terminal | • Operative on 4.5 to 5.5 volts (typically 5.4 volts). |
| 34. | VMM | Power supply terminal for the memory | • Operative on 4.5 to 5.5 volts (typically 5.4 volts). |
| 35. | HLD \overline{M} | Power hold instruction terminal for the memory | • Operative on 4.5 to 5.5 volts (typically 5.4 volts). |
| 37. | P6 ϕ | Reading of input switch state FWD REC INH | <ul style="list-style-type: none"> • "High" level when a tape not prepared with miserase prevention masking is loaded. • "Low" level with the cassette lid open. |
| 38. | P61 | Reading of input switch state REV REC INH | <ul style="list-style-type: none"> • "High" level when a tape not prepared with miserase prevention masking is loaded. • "Low" level with the cassette lid open. |

| Terminal No. | Symbol | Name | Function/operation |
|--------------|-----------|--|--|
| 39. | P62 | Reading of input switch state CAM A (S607) |  |
| 40. | P63 | Reading of input switch state CAM B (S606) | <ul style="list-style-type: none"> • Input in switching-over from FWD PLAY to REV PLAY.  |
| 41. | P7 ϕ | Reading of input switch state Half det. (S603) | <ul style="list-style-type: none"> • Goes "low" level when a cassette tape is loaded and the cassette lid is closed. • "High" level with the cassette lid open. |
| 42. | P71 | Leader tape det | <ul style="list-style-type: none"> • "Low" level pulses are generated between the leader tape section and the magnetic section.  |
| 43. | P72 | Detection of music intervals | • Goes low during a portion between music pieces (no signal portion). |
| 44. | P73 | | • Non connection. |
| 45. | P80 | Muting for all amplifiers | <ul style="list-style-type: none"> • "High" level during FF, REW and STOP. • "Low" level during REC, PLAY and CUE/REV. |
| 46. | P81 | CUE/REVIEW MUTE | <ul style="list-style-type: none"> • "High" level pulse with CUE/REVIEW button pressed during PLAY.  |
| 47. | P82 | Drive motor CCW rotation command | <ul style="list-style-type: none"> • "High" level pulse in each mode in operational sequence REV PLAY → PAUSE → STOP → FOW PLAY. • During switching between REV PLAY → FOW PLAY.  |
| 48. | P83 | Drive motor CW rotation command | <ul style="list-style-type: none"> • "High" level pulse in each mode in operational sequence FOW PLAY → PAUSE → STOP → REV PLAY. • During switching between FWD PLAY → REV PLAY.  |
| 49. | P9 ϕ | REC indication output | <ul style="list-style-type: none"> • "High" level concurrently with REC command. • In TIMER REC mode, "High" level just after power on.  |
| 50. | P91 | PAUSE indication output | <ul style="list-style-type: none"> • "High" level concurrently with PAUSE command.  |

| Terminal No. | Symbol | Name | Function/operation |
|--------------|-----------|--|---|
| 51. | P92 | Reel takeup torque selection and PLAY indication output | <ul style="list-style-type: none"> • "High" level during PLAY. • "Low" level during FF, REW and STOP. |
| 52. | P93 | DIRECTION indication output | <ul style="list-style-type: none"> • "Low" level during FORWARD. • "High" level during REVERSE. |
| 53. | PA ϕ | Bias oscillation ON/OFF | <ul style="list-style-type: none"> • Goes to "Low" immediately after REC/PAUSE operation. • Remains in "Low" during REC/PLAY operation. • Goes to "Low" approximately 20msec after the STOP command is given.  |
| 54. | PA1 | REC MUTE | <ul style="list-style-type: none"> • "High" level pulse with REC MUTE button pressed during REC PLAY.  |
| 55. | PA2 | FF/REW motor rotation select (FF/REW motor CCW rotation command) | <ul style="list-style-type: none"> • "High" level during: <ul style="list-style-type: none"> FWD PLAY FWD F.F REV REW |
| 56. | PA4 | FF/REW motor rotation select (FF/REW motor CW rotation command) | <ul style="list-style-type: none"> • "High" level during: <ul style="list-style-type: none"> REV PLAY REV F.F FWD REW |
| 57. | PB ϕ | Reel table rotation detection-1 (tape counter) | <ul style="list-style-type: none"> • Rotation pulses are generated according to the rotation speed of the take-up reel table in the FWD mode. • Two pulses are generated per reel table rotation.  |
| 58. | PB1 | Reel table rotation detection-2 (tape counter) | |
| 59. | PB2 | Output mute during power on | <ul style="list-style-type: none"> • Goes "high" level when power is on. • This terminal goes "low" level when terminal 17 goes "high" level.  |
| 60. | PB3 | Input switch reading Head rotation direction detection (S608) | <ul style="list-style-type: none"> • "High" level during FORWARD. |

| Terminal No. | Symbol | Name | Function/operation |
|--------------|--------|---|---|
| 61. | OSC2 | Terminals for connecting the oscillator device of a clock | <ul style="list-style-type: none"> Generates oscillation at approximately 4MHz.  |
| 62. | OSC1 | Terminals for connecting the oscillator device of a clock |  |
| 63. | TC1 | _____ | <ul style="list-style-type: none"> Non connection. |
| 64. | TCφ | _____ | <ul style="list-style-type: none"> Non connection.  |

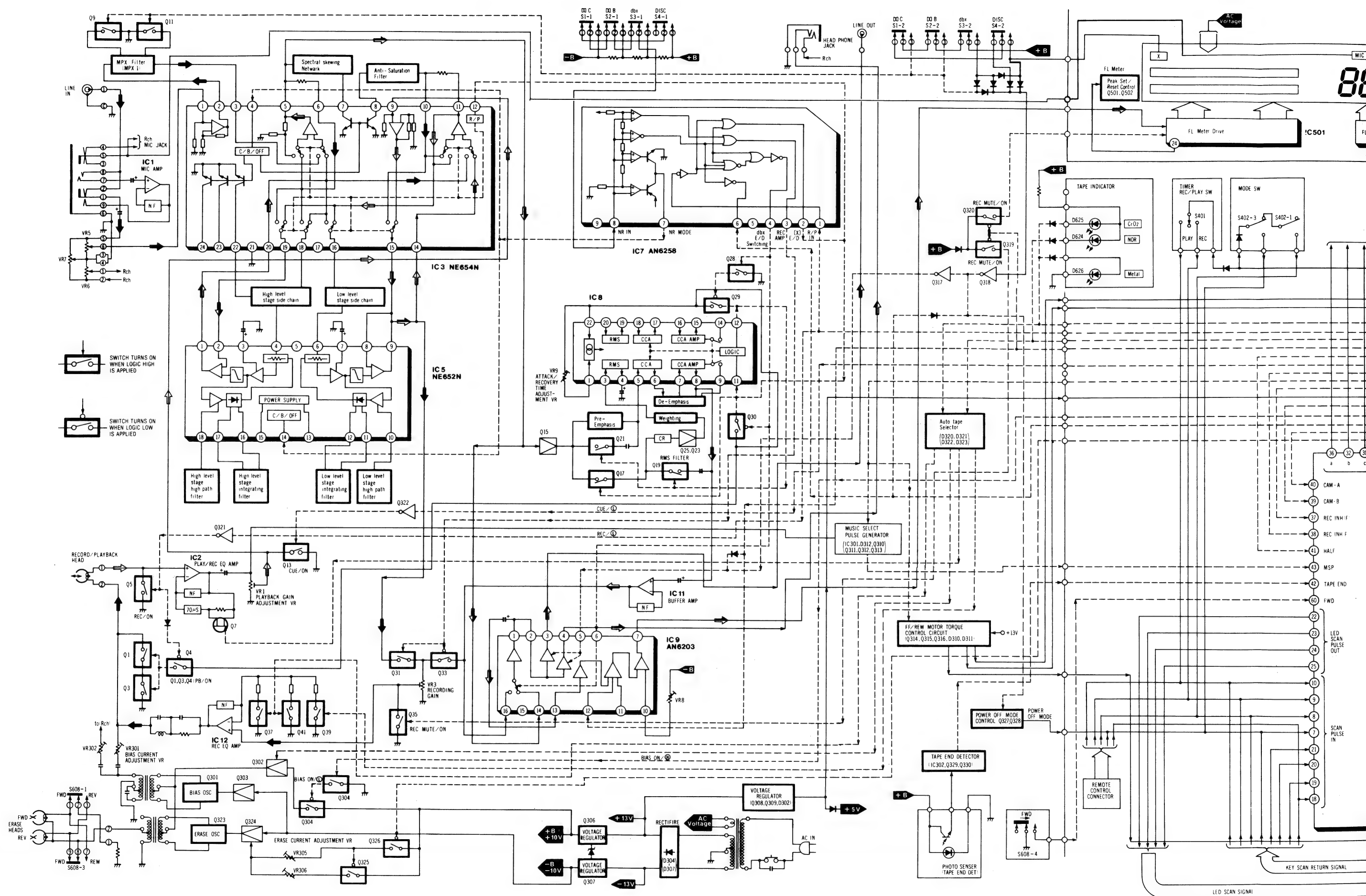
NOTES (for Block diagram)

- S1-1, S1-2.....
Dolby-C IN/OUT switch (shown in OUT position).
- S2-1, S2-2.....
Dolby-B IN/OUT switch (shown in OUT position).
- S3-1, S3-2.....
dbx "Tape" IN/OUT switch (shown in OUT position).
- S4-1, S4-2.....
dbx "Disc" IN/OUT switch (shown in OUT position).
- S301.....
Power ON/OFF switch (shown in OFF position).
- S302.....
AC power voltage select switch.
- S401.....
Timer REC/PLAY switch (shown in Timer REC position).
- S402-1, S402-2.....
Mode select switch (⏪ / ⏩).
- S501.....
Direction switch (shown in OFF position).
- S502.....
Record switch (shown in OFF position).
- S503.....
F.F switch (shown in OFF position).
- S504.....
Rewind switch (shown in OFF position).
- S505.....
Play switch (shown in OFF position).
- S506.....
Pause switch (shown in OFF position).
- S507.....
Stop switch (shown in OFF position).
- S508.....
Auto-Rec mute switch (shown in OFF position).
- S509.....
Counter Reset switch (shown in OFF position).
- S510.....
Tape counter switch (shown in OFF position).
- S511.....
Time counter switch (shown in OFF position).
- S512.....
D.M.S. [1] switch (shown in OFF position).
- S513.....
D.M.S. [2] switch (shown in OFF position).
- S514.....
D.M.S. [3] switch (shown in OFF position).
- S515.....
D.M.S. [4] switch (shown in OFF position).
- S516.....
D.M.S. [5] switch (shown in OFF position).
- S517.....
D.M.S. [6] switch (shown in OFF position).
- S518.....
D.M.S. [7] switch (shown in OFF position).
- S519.....
D.M.S. [8] switch (shown in OFF position).
- S520.....
D.M.S. [9] switch (shown in OFF position).
- S521.....
D.M.S. [10] switch (shown in OFF position).
- S522.....
D.M.S. [12] switch (shown in OFF position).
- S523.....
D.M.S. [13] switch (shown in OFF position).
- S524.....
Blank Skip switch (shown in OFF position).
- S525.....
Repeat switch (shown in OFF position).
- S526.....
D.M.S. FWD/REV switch.
- S601.....
Auto tape select switch (for Metal tape).
- S602.....
Auto tape select switch (for CrO₂ tape).
- S603.....
Cassette half switch (shown in OFF position).
- S604.....
FWD Rec inhibit switch (shown in OFF position).
- S605.....
REV Rec inhibit switch (shown in OFF position).
- S606.....
FWD/REV changing switch (shown in OFF position).
- S607.....
Mode changing switch (shown in OFF position).
- S608.....
FWD/REV detection switch (shown in FWD position).

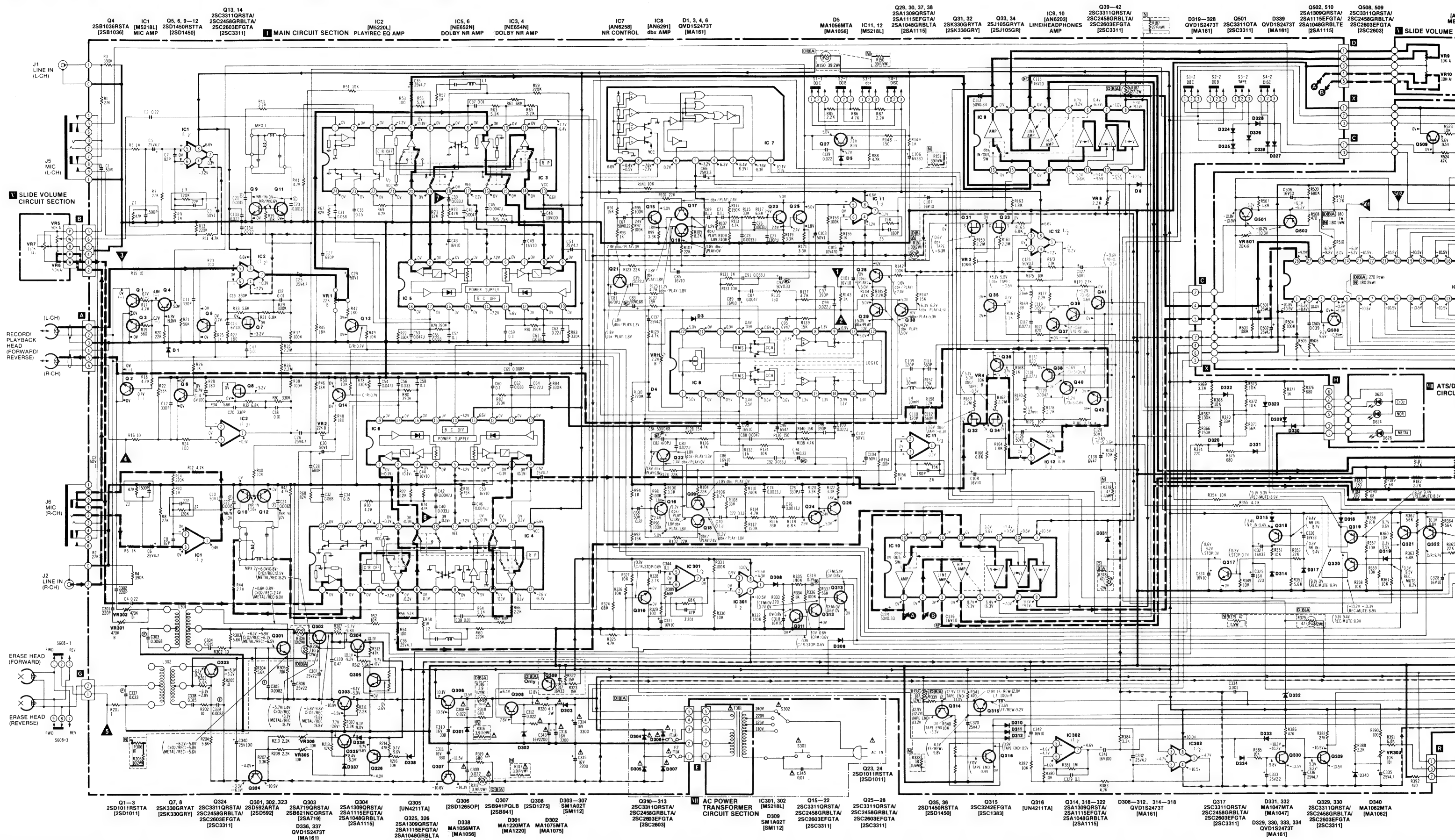
BLOCK DIAGRAM

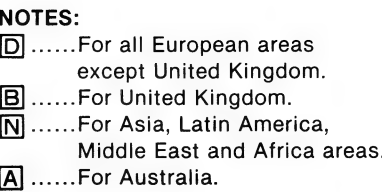
RS-B78R

RS-B78R



SCHEMATIC DIAGRAM (for Main/FL Meter Section)





NOTES:

- S1-1, S1-2.....Dolby-C IN/OUT switch (shown in OUT position).
- S2-1, S2-2.....Dolby-B IN/OUT switch (shown in OUT position).
- S3-1, S3-2.....dbx "Tape" IN/OUT switch (shown in OUT position).
- S4-1, S4-2.....dbx "Disc" IN/OUT switch (shown in OUT position).
- S301.....Power ON/OFF switch (shown in OFF position).
- S302.....AC power voltage select switch.
- S401.....Timer REC/PLAY switch (shown in Timer REC position).
- S402-1, S402-3.....Mode select switch (○ / →).
- S501.....Direction switch (shown in OFF position).
- S502.....Record switch (shown in OFF position).
- S503.....F.F switch (shown in OFF position).
- S504.....Rewind switch (shown in OFF position).
- S505.....Play switch (shown in OFF position).
- S506.....Pause switch (shown in OFF position).
- S507.....Stop switch (shown in OFF position).
- S508.....Auto-Rec mute switch (shown in OFF position).
- S509.....Counter Reset switch (shown in OFF position).
- S510.....Tape counter switch (shown in OFF position).
- S511.....Time counter switch (shown in OFF position).
- S512.....D.M.S. 1 switch (shown in OFF position).
- S513.....D.M.S. 2 switch (shown in OFF position).
- S514.....D.M.S. 3 switch (shown in OFF position).
- S515.....D.M.S. 4 switch (shown in OFF position).
- S516.....D.M.S. 5 switch (shown in OFF position).
- S517.....D.M.S. 6 switch (shown in OFF position).
- S518.....D.M.S. 7 switch (shown in OFF position).
- S519.....D.M.S. 8 switch (shown in OFF position).
- S520.....D.M.S. 9 switch (shown in OFF position).
- S521.....D.M.S. 10 switch (shown in OFF position).
- S522.....D.M.S. 11 switch (shown in OFF position).
- S523.....D.M.S. 12 switch (shown in OFF position).
- S524.....Blank Skip switch (shown in OFF position).
- S525.....Repeat switch (shown in OFF position).
- S526.....D.M.S. FWD/REV switch.
- S601.....Auto tape select switch (for Metal tape).
- S602.....Auto tape select switch (for CrO₂ tape).
- S603.....Cassette half switch (shown in OFF position).
- S604.....FWD Rec inhibit switch (shown in OFF position).
- S605.....REV Rec inhibit switch (shown in OFF position).
- S606.....FWD/REV changing switch (shown in OFF position).
- S607.....Mode changing switch (shown in OFF position).
- S608.....FWD/REV detection switch (shown in FWD position).
- VR1, 2.....Playback gain adjustment VR.
- VR3, 4.....Overall gain adjustment VR.
- VR5, 6.....Input level controls.
- VR7.....Balance control.
- VR8.....FL meter adjustment VR (-40dB indication).
- VR9, 10.....Output level controls.
- VR11.....Attack recovery time adjustment VR.
- VR301, 302.....Bias current adjustment VR.
- VR303.....Photo sensor sensitivity adjustment VR.
- VR305, 306.....Erase current adjustment VR.
- VR501.....FL meter adjustment VR (0dB indication).
- VR601.....Takeup torque adjustment VR.
- L1, L2.....Skewing Network.
- L3, L4.....Bias Trap Coil.
- L5, L6.....Peaking Coil.
- L7.....Check Coil.
- L301, L302.....Bias Oscillation Coil.
- L401.....Choke Coil.
- L601—L604.....Choke Coil.
- MPX1, 2.....Multiplex Filter.
- Resistance are in ohms (Ω). 1/4 watt unless specified otherwise.
1K = 1,000(Ω), 1M = 1,000k(Ω).
- Capacity are in micro-farads (μF) unless specified otherwise.
- The mark (▼) shows test point. e.g. ▼ = Test point 1.
- All voltage values shown in circuitry are under no signal condition and playback mode with volume control at minimum position otherwise specified.
- ().....Voltage values at record mode.
- dbx/PLAY.....Voltage values at dbx encode mode.
- dbx/TAPE.....Voltage values at dbx encode or decode mode.
- CrO₂.....Voltage values at CrO₂ tape mode.
- Metal.....Voltage values at Metal tape mode.
- Stop.....Voltage values at Stop mode.
- C/R.....Voltage values at CUE/REV mode.
- FF/REW.....Voltage values at FF/REW mode.
- REC MUTE.....Voltage values at AUTO REC MUTE mode.
- 70μs.....Voltage values at CrO₂ or Metal tape mode.
- NR IN.....Voltage value at which the noise reduction switch is turned on.
- CFM.....Voltage value at which the test tape QZZCFM (315Hz/0dB) is played.
- TAPE END.....Voltage at the end of the cassette tape.
- For measurement use VTVM.
- indicates B+ (bias).
- indicates B- (bias).
- indicates the flow of the playback signal. (NR out).
- ◆ indicates the flow of the recording signal. (NR out).

- Important safety notice
Components identified by Δ mark have special characteristics important for safety. When replacing any of these components, use only manufacturer's specified parts.
- Described in the schematic diagram are two types of numbers; the supply parts numbers and production parts number for transistors and diodes. One type of number is used for supply parts number and production parts number when they are identical.

e.g. Q1
2SC1844(E,F) — Production parts number
[2SC1844E] — Supply parts number
D212
1S2473T77 — Production parts number
[MA161] — Supply parts numbers

- The supply parts number is described alone in the replacement parts list.

- This schematic diagram may be modified at any time with the development of new technology.

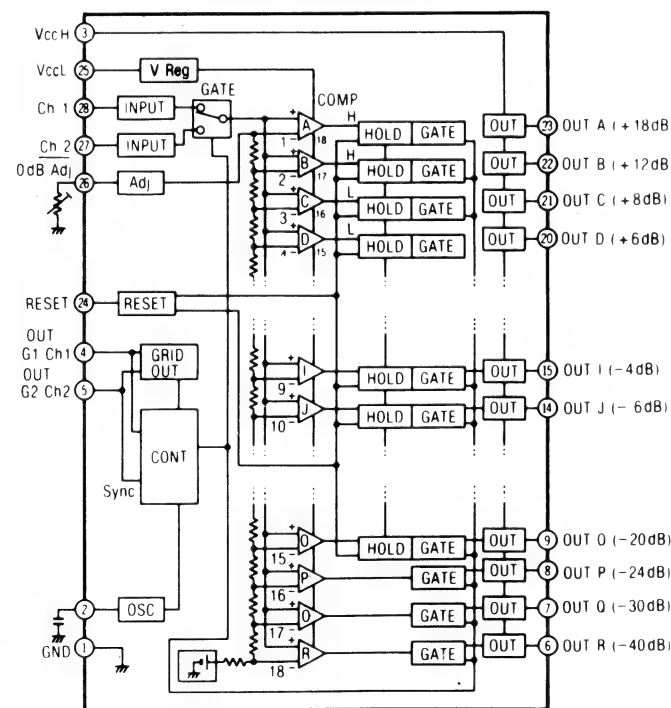
- * Output level control...MAX
- * Input level control ...MAX
- * Balance controlCenter

SPECIFICATIONS

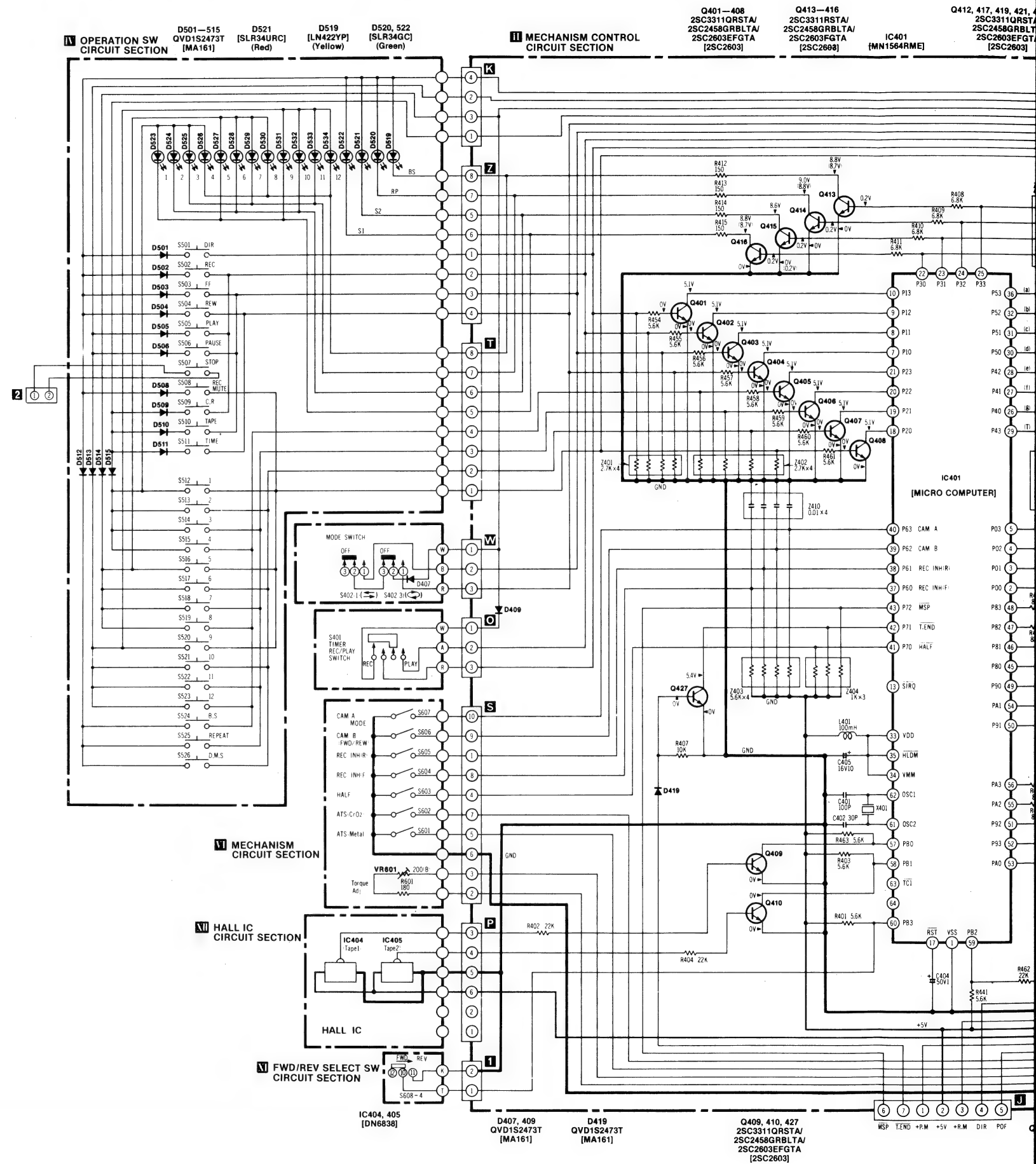
| | |
|--|---|
| Playback S/N ratio * Test tape...QZZCFM | Greater than 45dB |
| Overall distortion * Test tape ...QZZCRA for Normal ...QZZCRX for CrO ₂ ...QZZCRZ for Metal | Less than 4% |
| Overall S/N ratio * Test tape...QZZCRA | Greater than 43dB (without NAB filter) |

EQUIVALENT CIRCUIT

IC501: AN6870N



SCHEMATIC DIAGRAM (for Mechanism/Mechanism Control Section)



SCHEMATIC DIAGRAM (for Mechanism/Mechanism Control Section)

characteristics important
ponents, use only

pes of numbers; the supply
r transistors and diodes.
number and production parts

number
number

number
numbers
the replacement parts list.

modified at any time
ology.

l control...MAX
control ...MAX
controlCenter

water than 45dB

less than 4%

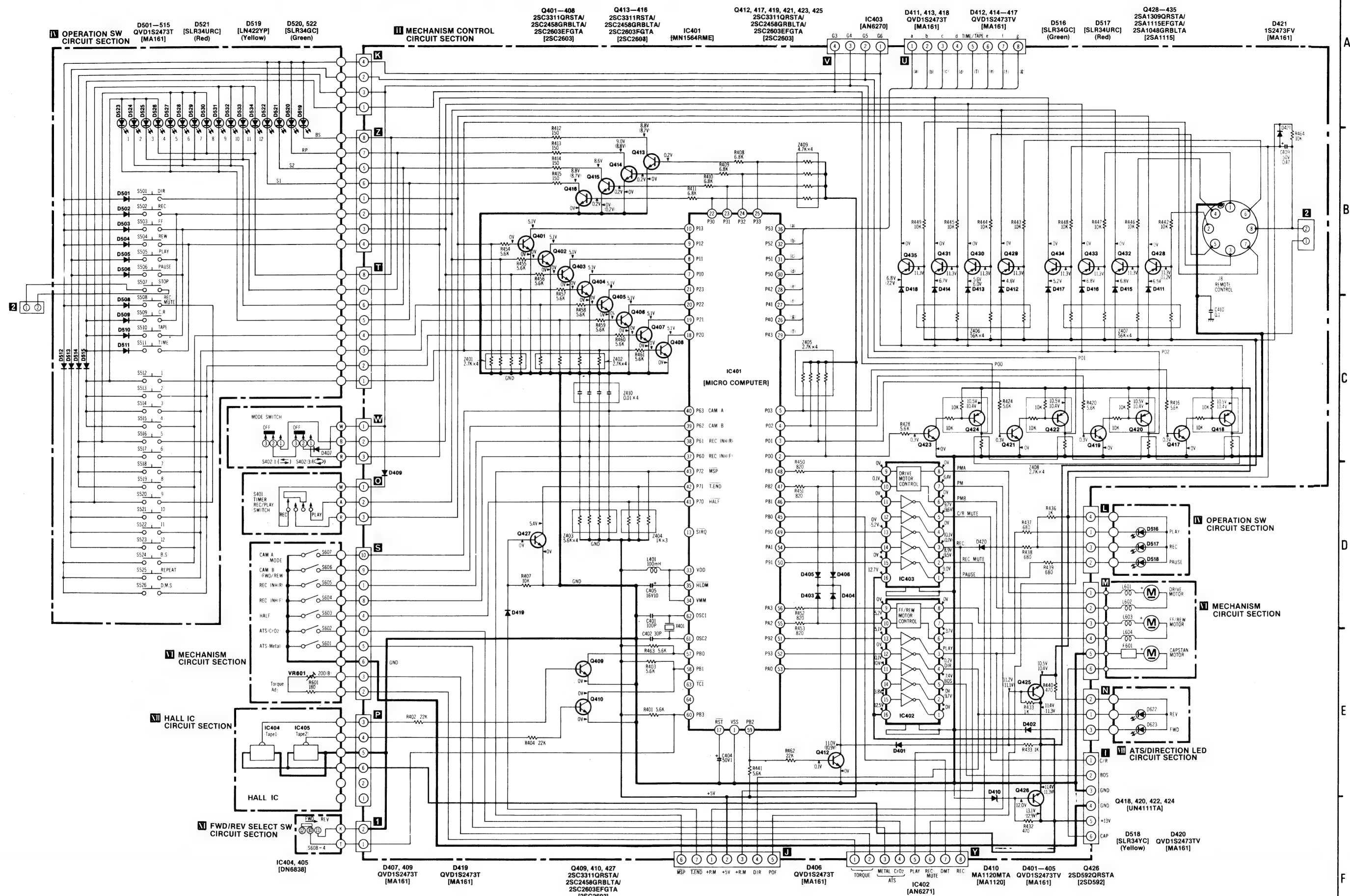
water than 43dB
hout NAB filter)

UIT

ATE OUT 23 OUT A (+18dB)
ATE OUT 22 OUT B (+12dB)
ATE OUT 21 OUT C (+8dB)
ATE OUT 20 OUT D (+6dB)

ATE OUT 15 OUT I (-4dB)
ATE OUT 14 OUT J (-6dB)

ATE OUT 9 OUT O (-20dB)
ATE OUT 8 OUT P (-24dB)
ATE OUT 7 OUT Q (-30dB)
ATE OUT 6 OUT R (-40dB)



ELECTRICAL PARTS LIST

NOTES:

RESISTORS

ERD.....Carbon
ERG.....Metal-oxide
ERS.....Metal-oxide
ERO.....Metal-film
ERX.....Metal-film
ERC.....Fuse type metallic
ERQ.....Solid
ERF.....Cement

CAPACITORS

ECBA.....Ceramic
ECG.....Ceramic
ECK.....Ceramic
ECC.....Ceramic
ECF.....Ceramic
ECQM.....Polyester film
ECQE.....Polyester film
ECQF.....Polypropylene
ECE.....Electrolytic
ECEDN.....Non polar electrolytic
ECQS.....Polystyrene
ECS.....Tantalum
QCS.....Tantalum

REPLACEMENT PARTS LIST

Important safety notice
Components identified by Δ mark have special characteristics important for safety.
When replacing any of these components, use only manufacturer's specified parts.

| Ref. No. | Part No. | Part Name & Description |
|-------------------|-----------|-------------------------------|
| CONNECTORS | | |
| CN 1 | QJT1090 | Check Pin |
| CN 2 | QJT1054 | Contact |
| CN 3 | QJS1920TN | 2 Pin Socket |
| CN 4 | QJP1920TN | 2 Pin Plug |
| CN 5 | QJS1921TN | 3 Pin Socket |
| CN 6 | QJP1921TN | 3 Pin Plug |
| CN 7 | QJS1922TN | 6 Pin Socket |
| CN 8 | QJP1922TN | 6 Pin Plug |
| CN 9 | QJS1987S | Jumper Socket (4 Pin) |
| CN 10 | QJS1961S | Jumper Socket (5 Pin) |
| CN 11 | QJS1993S | Jumper Socket (6 Pin) |
| CN 12 | QJS1962S | Jumper Socket (7 Pin) |
| CN 13 | QJS1983S | Jumper Socket (8 Pin) |
| CN 14 | QJS1994S | Jumper Socket (6 Pin/Type-L) |
| CN 15 | QJS2004S | Jumper Socket (10 Pin/Type-L) |

| Ref. No. | Part No. | Ref. No. | Part No. |
|------------------|------------|------------------|------------|
| RESISTORS | | | |
| R 1, 2 | ERD25TJ273 | R 45, 46 | ERD25TJ183 |
| R 3, 4 | ERD25TJ394 | R 47, 48 | ERD25FJ181 |
| R 5, 6 | ERD25FJ102 | R 49, 50, 51, 52 | ERD25FJ103 |
| R 7, 8 | ERD25TJ273 | R 53, 54 | ERD25FJ101 |
| R 9, 10 | ERD25FJ102 | R 55, 56 | ERD25FJ512 |
| R 11, 12 | ERD25FJ472 | R 57, 58 | ERD25FJ102 |
| R 13, 14 | ERD25TJ224 | R 59, 60 | ERD25TJ224 |
| R 15, 16 | ERD25FJ100 | R 61, 62 | ERD25TJ683 |
| R 17, 18 | ERD25FJ472 | R 63, 64 | ERD25FJ512 |
| R 19 | ERD25FJ561 | R 65, 66 | ERD25FJ222 |
| R 20 | ERD25TJ223 | R 67, 68 | ERD25TJ823 |
| R 21, 22 | ERD25TJ563 | R 69, 70 | ERD25FJ472 |
| R 23, 24 | ERD25FJ101 | R 71, 72 | ERD25TJ123 |
| R 25, 26 | ERD25FJ102 | R 73, 74 | ERD25TJ473 |
| R 27, 28 | ERD25FJ181 | R 75, 76 | ERD25TJ753 |
| R 29, 30 | ERD25TJ334 | R 77, 78 | ERD25TJ334 |
| R 31, 32 | ERD25FJ682 | R 79, 80, 81, 82 | ERD25TJ394 |
| R 33, 34 | ERD25FJ562 | R 83, 84 | ERD25TJ334 |
| R 35, 36 | ERD25TJ225 | R 85 | ERD25FJ222 |
| R 37, 38 | ERD25TJ104 | R 86 | ERD25FJ472 |
| R 39, 40 | ERD25FJ103 | R 87 | ERD25FJ222 |
| R 41, 42 | ERD25FJ472 | R 88 | ERD25FJ472 |
| R 43, 44 | ERD25FJ272 | R 91, 92 | ERD25TJ153 |

| Ref. No. | Part No. | Ref. No. | Part No. |
|----------------------|--|--------------------------------|--|
| R 93, 94 | ERD25FJ102 | R 311 | ERD25FJ222 |
| R 95, 96, 97, 98 | ERD25TJ104 | R 312 | ERD25FJ562 |
| R 99, 100 | ERD25FJ332 | R 313 | ERD25TJ473 |
| R 101, 102, 103, 104 | ERD25TJ223 | R 316, 317 | [N] Δ ERX12ANJ3R9 |
| | | | [For Asia, Latin America, Middle East and Africa areas.] |
| R 105, 106 | ERD25FJ822 | R 318, 319 | [D][B][A] Δ ERQ12HJ3R9 |
| R 107, 108 | ERD25TJ333 | | [For all European and Australia.] |
| R 109, 110 | ERD25TJ244 | R 320 | Δ ERX2ANJ4R7 |
| R 111, 112 | ERD25TJ154 | R 321 | Δ ERD25FJ102 |
| R 113, 114 | ERD25FJ472 | R 322, 323 | [D][B][A] ERD25TJ153 |
| R 115, 116 | ERD25TJ333 | | [For all European and Australia.] |
| R 117, 118 | ERD25FJ682 | R 324 | ERD25TJ683 |
| R 119, 120, 121, 122 | ERD25FJ332 | R 325 | ERD25FJ472 |
| R 123, 124 | ERD25TJ223 | R 326, 327 | ERD25FJ103 |
| R 125, 126 | ERD25FJ472 | R 328 | ERD25FJ272 |
| R 127, 128 | ERD25TJ153 | R 329 | ERD25FJ101 |
| R 129 | ERD25FJ472 | R 330 | ERD25FJ103 |
| R 130 | ERD25TJ274 | R 331 | ERD25TJ104 |
| R 131, 132 | ERD25FJ102 | R 332 | ERD25TJ124 |
| R 133, 134 | ERD25FJ103 | R 333 | ERD25FJ221 |
| R 135, 136 | ERD25FJ151 | R 334 | ERD25FJ102 |
| R 137, 138 | ERD25FJ472 | R 335 | ERD25TJ184 |
| R 139, 140 | ERD25TJ153 | R 336 | ERD25TJ104 |
| R 141 | ERD25FJ103 | R 337 | ERD25TJ563 |
| R 142 | ERD25TJ104 | R 338 [N] | ERD25FJ180 |
| R 143 | ERD25FJ102 | | [For Asia, Latin America, Middle East and Africa areas.] |
| R 144 | ERD25TJ473 | R 339 | ERD25FJ120 |
| R 145 | ERD25FJ222 | R 340 | ERD25FJ103 |
| R 147 | ERD25TJ153 | R 341 | ERD25FJ471 |
| R 148 | ERD25FJ151 | R 345 | ERD25FJ103 |
| R 149 | ERD25FJ102 | R 349 | ERD25FJ103 |
| R 150, 151 | ERD25FJ390 | R 351 | ERD25FJ103 |
| | [For Asia, Latin America, Middle East and Africa areas.] | R 352 | ERD25FJ562 |
| | [D][B][A] ERD2FCG180 | | [For all European and Australia.] |
| R 152 | ERD25FJ103 | R 353 | ERD25TJ473 |
| R 153, 154 | ERD25TJ104 | R 354 | ERD25FJ103 |
| R 155, 156 | ERD25FJ102 | R 355 | ERD25FJ472 |
| R 157, 158 | ERD25TJ123 | R 356, 357, 358, 359, 360, 361 | ERD25FJ103 |
| R 159, 160, 161, 162 | ERD25TJ225 | R 362 | ERD25FJ563 |
| R 163, 164 | ERD25FJ182 | R 363 | ERD25FJ682 |
| R 165, 166 | ERD25FJ682 | R 364 | ERD25TJ563 |
| R 167, 168 | ERD25FJ102 | R 365 | ERD25TJ223 |
| R 169, 170 | ERD25FJ390 | R 366 | ERD25TJ154 |
| R 171, 172 | ERD25FJ821 | R 367 | ERD25TJ104 |
| R 173, 174 | ERD25FJ272 | R 368 | ERD25FJ103 |
| R 175, 176 | ERD25FJ103 | R 369 | ERD25FJ332 |
| R 177, 178 | ERD25FJ222 | R 370 | ERD25TJ333 |
| R 179, 180 | ERD25FJ272 | R 371 | ERD25TJ563 |
| R 181, 182 | ERD25FJ821 | R 372, 373 | ERD25FJ103 |
| R 183, 184 | ERD25FJ101 | R 374 | ERD25FJ221 |
| R 185, 186 | ERD25TJ473 | R 375, 376 | ERD25FJ681 |
| R 187 [N] | ERD25FJ270 | R 377 | ERD25FJ102 |
| | [For Asia, Latin America, Middle East and Africa areas.] | R 378, 379 | ERD25FJ470 |
| | [D][B][A] ERD2FCG270 | | [For all European and Australia.] |
| R 189, 190 | ERD25FJ680 | R 380 | ERD25FJ103 |
| R 201 | ERD25FJ180 | R 381 | ERD25TJ105 |
| R 202 | ERD25FJ100 | R 382 | ERD25FJ103 |
| R 203, 204 | ERD25FJ562 | R 383 | ERD25FJ472 |
| R 205 | ERD25FJ100 | R 384 | ERD25FJ332 |
| R 206 [N] | ERD25FJ100 | R 385 | ERD25FJ103 |
| | [For Asia, Latin America, Middle East and Africa areas.] | R 386 | ERD25TJ473 |
| | [D][B][A] ERD2FCG100 | R 387 | ERD25TJ273 |
| R 207 | ERD25FJ332 | R 388 | ERD25FJ222 |
| R 209, 210 | ERD25FJ222 | R 389 | ERD25TJ683 |
| R 213, 214 | ERD25TJ473 | R 390 | ERD25FJ101 |
| R 216 | ERD25FJ103 | R 391 | ERD25FJ682 |
| R 302 | ERD25FJ100 | R 392 | ERD25FJ471 |
| R 303, 304 | ERD25FJ562 | R 393 | ERD25FJ102 |
| R 305 | ERD25FJ100 | R 394 | ERD25FJ682 |
| R 306 [N] | ERD25FJ100 | R 395 | ERD25TJ183 |
| | [For Asia, Latin America, Middle East and Africa areas.] | R 396, 397 | ERD25FJ103 |
| | [D][B][A] ERD2FCG100 | R 398, 399 | ERD25FJ472 |
| R 307 | ERD25FJ222 | R 402 | ERD25TJ223 |
| R 310 | ERD25FJ332 | R 403 | ERD25FJ562 |
| | | R 404 | ERD25TJ223 |

| Ref. No. | Part No. | Ref. No. | Part No. |
|--|--|--|--|
| R 407 | ERD25TJ103 | R 407 | ERD25TJ103 |
| R 408, 409, 410, 411 | ERD25FJ682 | R 408, 409, 410, 411 | ERD25FJ682 |
| R 412, 413, 414, 415 | ERD25FJ151 | R 412, 413, 414, 415 | ERD25FJ151 |
| R 416 | ERD25FJ562 | R 416 | ERD25FJ562 |
| R 420 | ERD25FJ562 | R 420 | ERD25FJ562 |
| R 424 | ERD25FJ562 | R 424 | ERD25FJ562 |
| R 428 | ERD25FJ562 | R 428 | ERD25FJ562 |
| R 432 | ERD25FJ471 | R 432 | ERD25FJ471 |
| R 437, 438, 439 | ERD25FJ681 | R 437, 438, 439 | ERD25FJ681 |
| R 440 | ERD25FJ471 | R 440 | ERD25FJ471 |
| R 441 | ERD25FJ562 | R 441 | ERD25FJ562 |
| R 442, 443, 444, 445, 446, 447, 448, 449 | ERD25TJ103 | R 442, 443, 444, 445, 446, 447, 448, 449 | ERD25TJ103 |
| R 450, 451, 452, 453 | ERD25FJ821 | R 450, 451, 452, 453 | ERD25FJ821 |
| R 454, 455, 456, 457, 458, 459, 460, 461 | ERD25FJ562 | R 454, 455, 456, 457, 458, 459, 460, 461 | ERD25FJ562 |
| R 462 | ERD25TJ223 | R 462 | ERD25TJ223 |
| R 463 | ERD25FJ562 | R 463 | ERD25FJ562 |
| R 464 | ERD25FJ103 | R 464 | ERD25FJ103 |
| R 503, 504 | ERD25TJ104 | R 503, 504 | ERD25TJ104 |
| R 505, 506 | ERD25TJ181 | R 505, 506 | ERD25TJ181 |
| | [For Asia, Latin America, Middle East and Africa areas.] | | [For Asia, Latin America, Middle East and Africa areas.] |
| | [D][B][A] ERG12ANJ271 | | [For all European and Australia.] |
| R 507 | ERD25FJ182 | R 507 | ERD25FJ182 |
| R 508 | ERD25FJ471 | R 508 | ERD25FJ471 |
| R 509 | ERD25TJ684 | R 509 | ERD25TJ684 |
| R 510 [N] | ERD25TJ181 | R 510 [N] | ERD25TJ181 |
| | [For Asia, Latin America, Middle East and Africa areas.] | | [For Asia, Latin America, Middle East and Africa areas.] |
| | [D][B][A] ERG1ANJ181 | | [For all European and Australia.] |
| R 511 | ERD25FJ472 | R 511 | ERD25FJ472 |
| R 512, 513, 523 | ERD25FJ103 | R 512, 513, 523 | ERD25FJ103 |
| R 524, 525 | ERD25TJ473 | R 524, 525 | ERD25TJ473 |
| R 526 | ERD25FJ103 | R 526 | ERD25FJ103 |
| R 601 | ERD25TJ181 | R 601 | ERD25TJ181 |
| VARIABLE RESISTORS | | | |
| VR 1, 2 | QVNB3A00B223 | VR 1, 2 | QVNB3A00B223 |
| VR 3, 4 | QVNB3A00B103 | VR 3, 4 | QVNB3A00B103 |
| VR 5, 6 | QVBP1PUA54 | VR 5, 6 | QVBP1PUA54 |
| VR 7 | QVAL5KUG15 | VR 7 | QVAL5KUG15 |
| VR 8 | QVNB3A00B222 | VR 8 | QVNB3A00B222 |
| VR 9, 10 | QVBF1PUA14 | VR 9, 10 | QVBF1PUA14 |
| VR 11 | QVNB3A00B222 | VR 11 | QVNB3A00B222 |
| VR 301, 302 | QVNB3A00B474 | VR 301, 302 | QVNB3A00B474 |
| VR 303, 305, 306 | QVNB3A00B103 | VR 303, 305, 306 | QVNB3A00B103 |
| VR 501 | QVNB3A00B223 | VR 501 | QVNB3A00B223 |
| VR 601 | EVNK4AA00B22 | VR 601 | EVNK4AA00B22 |
| CAPACITORS | | | |
| C 1, 2 | ECEA50Z1 | C 1, 2 | ECEA50Z1 |
| C 3, 4 | ECQM1H224JZ | C 3, 4 | ECQM1H224JZ |
| C 5, 6 | ECEA1ES4R7 | C 5, 6 | ECEA1ES4R7 |
| C 7, 8 | ECCD1H820K | C 7, 8 | ECCD1H820K |
| C 9, 10 | ECEA50Z1 | C 9, 10 | ECEA50Z1 |
| C 11, 12 | ECCD1H331KB | C 11, 12 | ECCD1H331KB |
| C 13, 14 | ECEA0JS101 | C 13, 14 | ECEA0JS101 |
| C 17, 18 | ECQM1H103JZ | C 17, 18 | ECQM1H103JZ |
| C 19, 20 | ECCD1H331KB | C 19, 20 | ECCD1H331KB |
| C 21, 22 | ECFDD152KVY | C 21, 22 | ECFDD152KVY |
| C 23, 24 | ECFDD122KVY | C 23, 24 | ECFDD122KVY |
| C 25, 26 | ECEA1ES4R7 | C 25, 26 | ECEA1ES4R7 |
| C 27, 28 | ECCD1H681KB | C 27, 28 | ECCD1H681KB |
| C 29, 30 | ECEA50Z1 | C 29, 30 | ECEA50Z1 |
| C 31, 32 | ECQM1H683JZ | C 31, 32 | ECQM1H683JZ |
| C 33, 34 | ECQM1H154JZ | C 33, 34 | ECQM1H154JZ |
| C 35, 36 | ECEA1ES4R7 | C 35, 36 | ECEA1ES4R7 |
| C 37, 38 | ECQM1H103JZ | C 37, 38 | ECQM1H103JZ |
| C 39, 40 | ECQM1H333JZ | C 39, 40 | ECQM1H333JZ |
| C 41, 42 | ECQM1H472JZ | C 41, 42 | ECQM1H472JZ |
| C 43, 44 | ECEA1CS100 | C 43, 44 | ECEA1CS100 |
| C 45, 46 | ECQM1H472JZ | C 45, 46 | ECQM1H472JZ |
| C 47 | ECFDD103KXY | C 47 | ECFDD103KXY |
| C 48 | ECEA1AS101 | C 48 | ECEA1AS101 |
| C 49, 50 | ECEA1CS100 | C 49, 50 | ECEA1CS100 |
| C 51, 52 | ECEA1ES4R7 | C 51, 52 | ECEA1ES4R7 |
| C 53, 54 | ECQM1H473JZ | C 53, 54 | ECQM1H473JZ |
| C 55, 56 | ECQM1H333JZ | C 55, 56 | ECQM1H333JZ |
| C 57, 58, 59, 60 | ECQM1H104JZ | C 57, 58, 59, 60 | ECQM1H104JZ |
| COMBINATION PARTS | | | |
| Z 1, 2 | EXRP152K473 | Z 1, 2 | EXRP152K473 |

| Ref. No. | Part No. | Ref. No. | Part No. |
|--|--|---|----------|
| Z 3, 4 | EXRP220K124 | D 331, 332 | MA1047 |
| Z 5, 6 | EXRP181K153 | D 333, 334 | MA161 |
| Z 301 | EXRP470K683 | D 335 | LD702DU |
| Z 401, 402 | EXBEQ4272K | D 336, 337 | MA161 |
| Z 403 | EXBEQ4562K | D 338 | MA1056 |
| Z 404 | EXBEQ4102K | D 339 | MA161 |
| Z 405 | EXBEQ4272K | D 340 | MA1062 |
| Z 406, 407 | EXBEQ4563K | D 401, 402, 403, 404, 405, 406, 407 | MA161 |
| Z 408 | EXBEQ4272K | D 409 | MA161 |
| | | D 410 | MA1120 |
| Z 409 | EXBEQ4472K | | |
| Z 410 | EXFP4103ZW | D 411, 412, 413, 414, 415, 416, 417, 418, 419, 420, 421, 422 | MA161 |
| TRANSISTORS | | D 501, 502, 503, 504, 505, 506, 507, 508, 509, 510, 511, 512, 513, 514, 515 | MA161 |
| Q 1, 2, 3 | 2SD1011 | D 516 | SLR34GC |
| Q 4 | 2SB1036 | D 517 | SLR34URC |
| Q 5, 6 | 2SD1450 | D 518 | SLR34YC |
| Q 7, 8 | 2SK330GRY | D 519 | LN422YP |
| Q 9, 10, 11, 12 | 2SD1450 | D 520 | SLR34GC |
| Q 13, 14, 15, 16, 17, 18, 19, 20, 21, 22 | 2SC3311 | D 521 | SLR34URC |
| Q 23, 24 | 2SD1011 | D 522 | SLR34GC |
| Q 25, 26, 27, 28 | 2SC3311 | D 523, 524, 525, 526, 527, 528, 529, 530, 531, 532, 533, 534, 535, 536, 537, 538, 539, 540, 541, 542, 543, 544, 545, 546, 547, 548, 549, 550, 551, 552, 553, 554, 555, 556, 557, 558, 559, 560, 561, 562, 563, 564, 565, 566, 567, 568, 569, 570, 571, 572, 573, 574, 575, 576, 577, 578, 579, 580, 581, 582, 583, 584, 585, 586, 587, 588, 589, 590, 591, 592, 593, 594, 595, 596, 597, 598, 599, 600, 601, 602, 603, 604, 605, 606, 607, 608, 609, 610, 611, 612, 613, 614, 615, 616, 617, 618, 619, 620, 621, 622, 623, 624, 625, 626, 627, 628, 629, 630, 631, 632, 633, 634, 635, 636, 637, 638, 639, 640, 641, 642, 643, 644, 645, 646, 647, 648, 649, 650, 651, 652, 653, 654, 655, 656, 657, 658, 659, 660, 661, 662, 663, 664, 665, 666, 667, 668, 669, 670, 671, 672, 673, 674, 675, 676, 677, 678, 679, 680, 681, 682, 683, 684, 685, 686, 687, 688, 689, 690, 691, 692, 693, 694, 695, 696, 697, 698, 699, 700, 701, 702, 703, 704, 705, 706, 707, 708, 709, 710, 711, 712, 713, 714, 715, 716, 717, 718, 719, 720, 721, 722, 723, 724, 725, 726, 727, 728, 729, 730, 731, 732, 733, 734, 735, 736, 737, 738, 739, 740, 741, 742, 743, 744, 745, 746, 747, 748, 749, 750, 751, 752, 753, 754, 755, 756, 757, 758, 759, 760, 761, 762, 763, 764, 765, 766, 767, 768, 769, 770, 771, 772, 773, 774, 775, 776, 777, 778, 779, 780, 781, 782, 783, 784, 785, 786, 787, 788, 789, 790, 791, 792, 793, 794, 795, 796, 797, 798, 799, 800, 801, 802, 803, 804, 805, 806, 807, 808, 809, 810, 811, 812, 813, 814, 815, 816, 817, 818, 819, 820, 821, 822, 823, 824, 825, 826, 827, 828, 829, 830, 831, 832, 833, 834, 835, 836, 837, 838, 839, 840, 841, 842, 843, 844, 845, 846, 847, 848, 849, 850, 851, 852, 853, 854, 855, 856, 857, 858, 859, 860, 861, 862, 863, 864, 865, 866, 867, 868, 869, 870, 871, 872, 873, 874, 875, 876, 877, 878, 879, 880, 881, 882, 883, 884, 885, 886, 887, 888, 889, 890, 891, 892, 893, 894, 895, 896, 897, 898, 899, 900, 901, 902, 903, 904, 905, 906, 907, 908, 909, 910, 911, 912, 913, 914, 915, 916, 917, 918, 919, 920, 921, 922, 923, 924, 925, 926, 927, 928, 929, 930, 931, 932, 933, 934, 935, 936, 937, 938, 939, 940, 941, 942, 943, 944, 945, 946, 947, 948, 949, 950, 951, 952, 953, 954, 955, 956, 957, 958, 959, 960, 961, 962, 963, 964, 965, 966, 967, 968, 969, 970, 971, 972, 973, 974, 975, 976, 977, 978, 979, 980, 981, 982, 983, 984, 985, 986, 987, 988, 989, 990, 991, 992, 993, 994, 995, 996, 997, 998, 999, 1000 | |
| Q 29, 30 | 2SA1115 | | |
| Q 31, 32 | 2SK330GRY | | |
| Q 33, 34 | 2SJ105GR | | |
| Q 35, 36 | 2SD1450 | | |
| Q 37, 38 | 2SA1115 | | |
| Q 39, 40, 41, 42 | 2SC3311 | | |
| Q 301, 302 | 2SD592 | | |
| Q 303 | 2SA719 | | |
| Q 304 | 2SA1115 | | |
| Q 305 | UN4211TA | | |
| Q 306 | 2SD1265OP | | |
| Q 307 | 2SB941P | | |
| Q 308 | 2SD1275 | | |
| Q 309 | [D][B][A] 2SC3311 [For all European and Australia.] | | |
| Q 310, 311, 312, 313 | 2SC3311 | | |
| Q 314 | 2SA1115 | | |
| Q 315 | 2SC1383 | | |
| Q 316 | UN4211TA | | |
| Q 317 | 2SC3311 | | |
| Q 318, 319, 320, 321, 322 | 2SA1115 | | |
| Q 323 | 2SD592 | | |
| Q 324 | 2SA719 | | |
| Q 325, 326 | 2SA1115 | | |
| Q 327 | 2SC3311 | | |
| Q 328 | 2SA1115 | | |
| Q 329, 330 | 2SC3311 | | |
| Q 401, 402, 403, 404, 405, 406, 407, 408, 409, 410 | 2SC2603 | | |
| Q 412, 413, 414, 415, 416, 417 | 2SC2603 | | |
| Q 418 | UN4111TA | | |
| Q 419 | 2SC2603 | | |
| Q 420 | UN4111TA | | |
| Q 421 | 2SC2603 | | |
| Q 422 | UN4111TA | | |
| Q 423 | 2SC2603 | | |
| Q 424 | UN4111TA | | |
| Q 425 | 2SC2603 | | |
| Q 426 | 2SD592 | | |
| Q 427 | 2SC2603 | | |
| Q 428, 429, 430, 431, 432, 433, 434, 435 | 2SA1115 | | |
| Q 501 | 2SC3311 | | |
| Q 502 | 2SA1115 | | |
| Q 506, 509 | 2SC2603 | | |
| Q 510 | 2SA1115 | | |
| DIODES & RECTIFIERS | | | |
| D 1 | MA161 | | |
| D 3, 4 | MA161 | | |
| D 5 | MA1056 | | |
| D 6 | MA161 | | |
| D 301 | MA1220M | | |
| D 302 | MA1075 | | |
| D 303, 304, 305, 306, 307 | Δ SM112 | | |
| D 308 | MA161 | | |
| D 309 | SM112 | | |
| D 310, 311, 312, 314, 315, 316, 317, 318, 319, 320, 321, 322, 323, 324, 325, 326, 327, 328, 329, 330 | MA161 | | |
| | | | |
| | | | |
| | | | |
| | | | |
| | | | |
| | | | |
| | | | |
| | | | |
| | | | |
| | | | |
| | | | |
| | | | |
| | | | |
| | | | |
| | | | |
| | | | |
| | | | |
| | | | |
| | | | |
| | | | |
| | | | |
| | | | |
| | | | |
| | | | |
| | | | |
| | | | |
| | | | |
| | | | |
| | | | |
| | | | |
| | | | |
| | | | |
| | | | |
| | | | |
| | | | |
| | | | |
| | | | |
| | | | |
| | | | |
| | | | |
| | | | |
| | | | |
| | | | |
| | | | |
| | | | |
| | | | |
| | | | |
| | | | |
| | | | |
| | | | |
| | | | |
| | | | |
| | | | |
| | | | |
| | | | |
| | | | |
| | | | |
| | | | |
| | | | |
| | | | |
| | | | |
| | | | |
| | | | |
| | | | |
| | | | |
| | | | |
| | | | |
| | | | |
| | | | |
| | | | |
| | | | |
| | | | |
| | | | |
| | | | |
| | | | |
| | | | |
| | | | |
| | | | |
| | | | |
| | | | |
| | | | |
| | | | |
| | | | |
| | | | |
| | | | |
| | | | |
| | | | |
| | | | |
| | | | |
| | | | |
| | | | |
| | | | |
| | | | |
| | | | |
| | | | |
| | | | |
| | | | |
| | | | |
| | | | |
| | | | |
| | | | |
| | | | |
| | | | |
| | | | |
| | | | |
| | | | |
| | | | |
| | | | |
| | | | |
| | | | |
| | | | |
| | | | |
| | | | |
| | | | |
| | | | |
| | | | |
| | | | |
| | | | |
| | | | |
| | | | |
| | | | |

| Part No. | Ref. No. | Part No. | Ref. No. | Part No. | Ref. No. | Part No. | Ref. No. | Part No. |
|---|---|--|--|---|--|--|----------|----------|
| ERD25TJ103 410, 411 ERD25FJ682 414, 415 ERD25FJ151 ERD25FJ562 ERD25FJ562 ERD25FJ562 ERD25FJ562 ERD25FJ471 439 ERD25FJ681 ERD25FJ471 ERD25FJ562 444, 445, 446, 447, ERD25TJ103 452, 453 ERD25FJ821 456, 457, 458, 459, ERD25FJ562 ERD25TJ223 ERD25FJ562 ERD25FJ103 ERD25TJ104 ERD25TJ181 a, Latin America, East and Africa ERG12ANJ271 European and a.) ERD25FJ182 ERD25FJ471 ERD25TJ684 ERD25TJ181 a, Latin America, East and Africa ERG1ANJ181 European and a.) ERD25FJ472 523 ERD25FJ103 ERD25TJ473 ERD25FJ103 ERD25TJ181 E RESISTORS QVNB3A00B223 QVNB3A00B103 QVBP1PUA54 QVAL5KUG15 QVNB3A00B222 QVBF1PUA14 QVNB3A00B222 QVNB3A00B474 306 QVNB3A00B103 QVNB3A00B223 EVNK4AA00B22 ACITORS ECEA50Z1 ECQM1H224JZ ECEA1ES4R7 ECDD1H820K ECEA50Z1 ECKD1H331KB ECEA0JS101 ECQM1H103JZ ECKD1H331KB ECFDD152KVY ECFDD122KVY ECEA1ES4R7 ECKD1H681KB ECEA50Z1 ECQM1H683JZ ECQM1H104JZ ECEA1ES4R7 ECQM1H103JZ ECQM1H333JZ ECQM1H472JZ ECEA1CS100 ECQM1H472JZ ECFDD103KXY ECEA1AS101 ECEA1CS100 ECEA1ES4R7 ECQM1H473JZ ECQM1H333JZ 60 ECQM1H104JZ | C 61, 62 C 63, 64 C 65 C 66 C 67, 68 C 69, 70, 71, 72 C 73, 74, 75, 76 C 77, 78 C 79, 80 C 81, 82 C 83, 84 C 85, 86 C 87, 88 C 89, 90 C 91, 92 C 93, 94 C 95, 96 C 97, 98 C 99, 100 C 101 C 102, 103, 104 C 105 C 106 C 107, 108 C 109, 110 C 111, 112 C 113, 114 C 115, 116 C 117, 118 C 119, 120 C 125, 126, 127, 128 C 133, 134 C 137 C 138 C 139 C 301, 302 C 303 C 304 C 305 C 306, 307 C 308, 309 C 310, 311 C 312 C 314 C 315 C 316 C 317 C 318 C 319 C 320 C 324 C 325 C 326, 327 C 328 C 329 C 330 C 331 C 332 C 333 C 334 C 335 C 336 C 337 C 338 C 339 C 340 C 341 C 342 C 343 C 344 C 345 C 401 C 402 C 404 C 405 C 409 C 410 C 501, 502 C 505 C 506 | ECQM1H333JZ ECQM1H224JZ ECQM1H222JZ ECEA1EN3R3 ECEA50ZR22 ECQM1H104JZ ECQM1H332JZ ECDD1H331K ECQM1H223JZ ECDD1H471K ECEA50MR68R ECEA1CS100 ECQM1H472JZ ECEA16Z10 ECQM1H333JZ ECEA50MR33R ECEA0JS470 ECDD1H391J ECQM1H223JZ ECEA1CS100 ECEA50Z1 ECEA1AS471 ECEA0JS331 ECEA1CS100 ECKD2H121KB ECKD1H561KB ECEA50ZR33 ECEA1CN100 ECQM1H273JZ ECFDD472KVY ECEA50Z1 ECFDD223KXY ECEA1ES4R7 ECEA0JS470 ECKD1H223ZF ECDD1H221KD ECQP1682JZ ECFDD153KXY ECFDD822KVY ECEA1ES220 ECKD1H223ZF ECEA1CS331 ECKD1H223ZF ECEA1CS332 ECEA1CS222 ECEA1CS332 ECEA1CS330 [For all European and Australia.] ECEA1CS100 ECQM1H394JZ ECEA1ES4R7 ECEA1CS100 ECEA1CS221 ECEA1CS330 ECEA50Z1 ECQM1H104JZ ECQM1H474JZ ECEA1CS100 ECEA1ES4R7 ECEA1ES220 ECQM1H102JZ ECEA0JS101 ECEA1ES4R7 ECQP1333JZ ECFDD153KXY ECFDD822KVY ECEA1ES101 ECEA1CS101 ECEA1CS100 ECQM1H104JZ ECQV1H104JZ ECQU2A103MF ECDD1H101KC ECDD1H330KC ECEA1HS010 ECEA1CS100 ECEA1HSR47 ECQM1H104JZ ECEA1ES4R7 ECFDD393KXD ECEA1CS100 | Z 3, 4 Z 5, 6 Z 301 Z 401, 402 Z 403 Z 404 Z 405 Z 406, 407 Z 408 Z 409 Z 410 Q 1, 2, 3 Q 4 Q 5, 6 Q 7, 8 Q 9, 10, 11, 12 Q 13, 14, 15, 16, 17, 18, 19, 20, 21, 22 Q 23, 24 Q 25, 26, 27, 28 Q 29, 30 Q 31, 32 Q 33, 34 Q 35, 36 Q 37, 38 Q 39, 40, 41, 42 Q 301, 302 Q 303 Q 304 Q 305 Q 306 Q 307 Q 308 Q 309 [D][B][A] 2SC3311 [For all European and Australia.] Q 310, 311, 312, 313 Q 314 Q 315 Q 316 Q 317 Q 318, 319, 320, 321, 322 Q 323 Q 324 Q 325, 326 Q 327 Q 328 Q 329, 330 Q 401, 402, 403, 404, 405, 406, 407, 408, 409, 410 Q 412, 413, 414, 415, 416, 417 Q 418 Q 419 Q 420 Q 421 Q 422 Q 423 Q 424 Q 425 Q 426 Q 427 Q 428, 429, 430, 431, 432, 433, 434, 435 Q 501 Q 502 Q 508, 509 Q 510 D 1 D 3, 4 D 5 D 6 D 301 D 302 D 303, 304, 305, 306, 307 D 308 D 309 D 310, 311, 312, 314, 315, 316, 317, 318, 319, 320, 321, 322, 323, 324, 325, 326, 327, 328, 329, 330 | EXRP220K124 EXRP181K153 EXRP470K683 EXBEQ4272K EXBEQ4562K EXBEQ4102K EXBEQ4272K EXBEQ4563K EXBEQ4272K EXBEQ4472K EXFP4103ZW 2SD1011 2SB1036 2SD1450 2SK330GRY 2SD1450 2SC3311 2SD1011 2SC3311 2SA1115 2SK330GRY 2SJ105GR 2SD1450 2SA1115 2SC3311 2SD592 2SA719 2SA1115 UN4211TA 2SD1265OP 2SB941P 2SD1275 Q 309 [D][B][A] 2SC3311 [For all European and Australia.] Q 310, 311, 312, 313 Q 314 Q 315 Q 316 Q 317 Q 318, 319, 320, 321, 322 Q 323 Q 324 Q 325, 326 Q 327 Q 328 Q 329, 330 Q 401, 402, 403, 404, 405, 406, 407, 408, 409, 410 Q 412, 413, 414, 415, 416, 417 Q 418 Q 419 Q 420 Q 421 Q 422 Q 423 Q 424 Q 425 Q 426 Q 427 Q 428, 429, 430, 431, 432, 433, 434, 435 Q 501 Q 502 Q 508, 509 Q 510 MA161 MA161 MA1056 MA161 MA1062 MA161 MA161 MA1120 MA161 SLR34GC SLR34URC SLR34YC LN422YP SLR34GC SLR34URC SLR34GC 523, 524, 525, 526, 527, 528, 529, 530, 531, 532, 533, 534 refer to S512—S523 (D.M.S. [1]—[12] Indication LED) | D 331, 332 D 333, 334 D 335 D 336, 337 D 338 D 339 D 340 D 401, 402, 403, 404, 405, 406, 407 D 409 D 410 D 411, 412, 413, 414, 415, 416, 417, 418, 419, 420, 421 MA161 D 501, 502, 503, 504, 505, 506, 507, 508, 509, 510, 511, 512, 513, 514, 515 MA161 SLR34GC D 517 D 518 D 519 D 520 D 521 D 522 D 523, 524, 525, 526, 527, 528, 529, 530, 531, 532, 533, 534 refer to S512—S523 (D.M.S. [1]—[12] Indication LED) | MA1047 MA161 LD702DU MA161 MA1056 MA161 MA1062 MA161 MA1120 M5218L M5220L NE654N NE652N AN6258 AN6291 AN6203 M5218L M5218L MN1564RME AN6271 AN6270 DN6838 AN6870N AN6280 QRUF10WH EF0A4R0M01A | | |
| INTEGRATED CIRCUITS | | | | | | | | |
| IC 1 M5218L IC 2 M5220L IC 3, 4 NE654N IC 5, 6 NE652N IC 7 AN6258 IC 8 AN6291 IC 9, 10 AN6203 IC 11, 12 M5218L IC 301, 302 M5218L IC 401 MN1564RME IC 402 AN6271 IC 403 AN6270 IC 404, 405 DN6838 IC 501 AN6870N IC 502, 503 AN6280 | | | | | | | | |
| IC PROTECTOR | | | | | | | | |
| F 601 QRUF10WH | | | | | | | | |
| CERAMIC RESONATOR | | | | | | | | |
| X 401 EF0A4R0M01A | | | | | | | | |

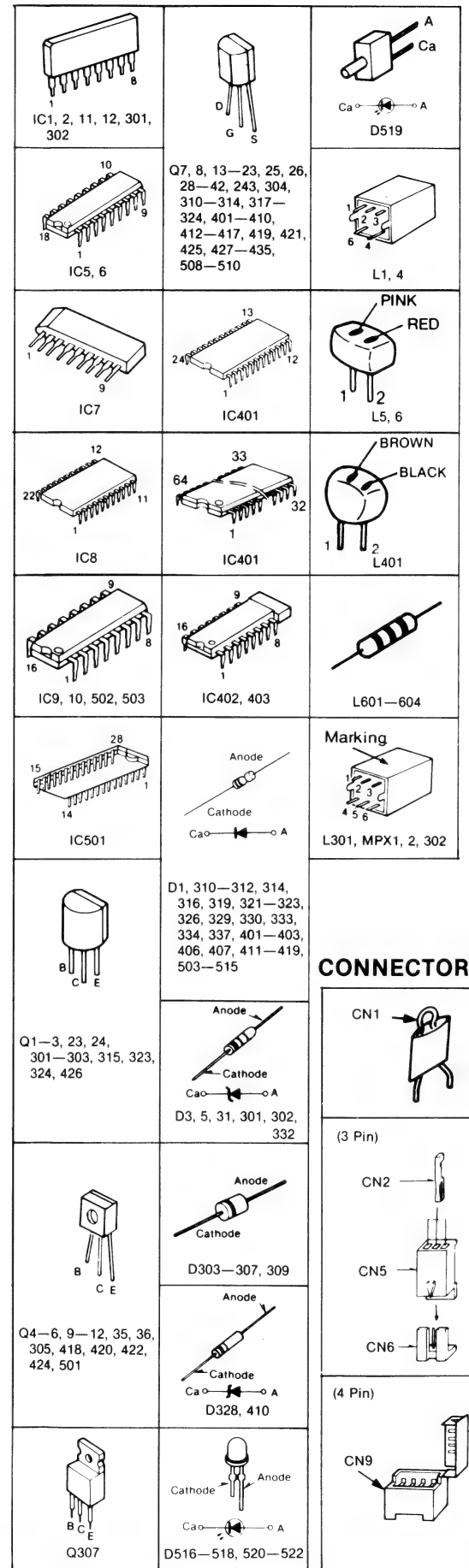
TRANSISTORS

IC PROTECTOR

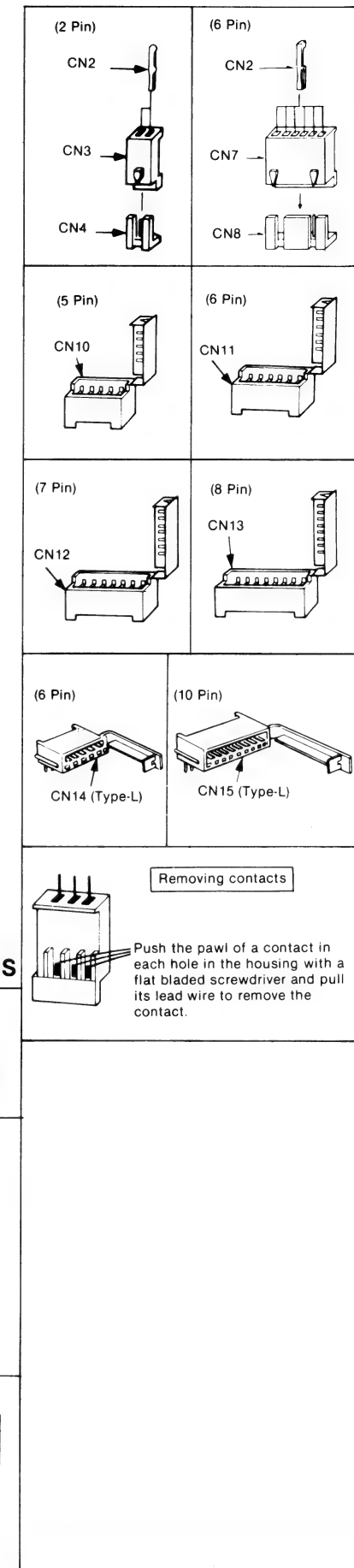
CERAMIC RESONATOR

| Ref. No. | Part No. | Part Name & Description | Ref. No. | Part No. | Part Name & Description |
|--------------------------|---------------------|--|---------------------------|----------|--|
| MULTIPLEX FILTERS | | | | | |
| MPX 1, 2 | QLM9Z10K | M.P.X Coil | S 505, 506, 507 | SSG13 | Key Board Switch (Play/Pause/Stop) |
| COILS | | | | | |
| L 1, 2 | ELM7Q306A | Skewing Network | S 508 | QSWY207 | Duble Key Board Switch (Auto Rec Muto) |
| L 3, 4 | QLQX0343KWA | Bias Trap Coil | S 509, 510, 511 | SSG13 | Key Board Switch (Counter Reset/Tape/Time) |
| L 5, 6 | QLQX2722D | Peaking Coil | S 512 | QSW1125 | Key Board Switch with D523 (D.M.S 1) |
| L 7 | QLQX1012DT | Choke Coil | S 513 | QSW1125 | Key Board Switch with D524 (D.M.S 2) |
| L 301, 302 | QLB0198 | Bias Oscillation Coil | S 514 | QSW1125 | Key Board Switch with D525 (D.M.S 3) |
| L 401 | QLQX1012DT | Choke Coil | S 515 | QSW1125 | Key Board Switch with D526 (D.M.S 4) |
| L 601, 602, 603, 604 | ELEH101KA | Choke Coil | S 516 | QSW1125 | Key Board Switch with D527 (D.M.S 5) |
| TRANSFORMER | | | | | |
| T 301 | [D][B][A] QLPA76ELX | AC Power Transformer [For all European areas.] | S 517 | QSW1125 | Key Board Switch with D528 (D.M.S 6) |
| [D][B][A] | QLPA88ELX | AC Power Transformer [For Australia, Asia, Latin America, Middle East and Africa areas.] | S 518 | QSW1125 | Key Board Switch with D529 (D.M.S 7) |
| [A][N] | QLPA88ELX | AC Power Transformer [For Australia, Asia, Latin America, Middle East and Africa areas.] | S 519 | QSW1125 | Key Board Switch with D530 (D.M.S 8) |
| [A][N] | QLPA88ELX | AC Power Transformer [For Australia, Asia, Latin America, Middle East and Africa areas.] | S 520 | QSW1125 | Key Board Switch with D531 (D.M.S 9) |
| [A][N] | QLPA88ELX | AC Power Transformer [For Australia, Asia, Latin America, Middle East and Africa areas.] | S 521 | QSW1125 | Key Board Switch with D532 (D.M.S 10) |
| F 1 [N] | XBA2E03NS5 | Fuse (300mA) [For Asia, Latin America, Middle East and Africa areas.] | S 522 | QSW1125 | Key Board Switch with D533 (D.M.S 11) |
| [D][B][A] | XBAQ100027 | Fuse (T 1A) [For all European and Australia.] | S 523 | QSW1125 | Key Board Switch with D534 (D.M.S 12) |
| F 2 | [D][B][A] | XBAQ100027 | S 524 | SSG13 | Key Board Switch (Blank Skip) |
| [D][B][A] | XBAQ100027 | Fuse (T 1A) [For all European and Australia.] | S 525 | QSW1130 | Tact Switch (Repeat) |
| [D][B][A] | XBAQ100027 | Fuse (T 1A) [For all European and Australia.] | S 526 | SSG13 | Key Board Switch (D.M.S) |
| [D][B][A] | XBAQ100027 | Fuse (T 1A) [For all European and Australia.] | S 601, 602, 603, 604, 605 | QSB0296 | Leaf Switch [Metal Tape/CrO ₂ Tape/ Half/FWD•REC Inhibit/ REV•REC Inhibit] |
| S 1, 2, 3, 4 | QSW2240 | Push Switch (NR Selector) | S 606, 607 | QSB0295 | Leaf Switch (CAM B/CAM A) |
| S 301 | QSW1127 | Push Switch (Power ON/OFF) | S 608 | QSS4223 | Slide Switch (FWD/REV Detector) |
| S 302 | QSR1407 | Rotary Switch (AC Power Voltage Selector) | JACKS | | |
| S 401 | QSS1306 | Slide Switch (Timer REC/PLAY) | J 1, 2, 3, 4 | QEJ5030C | Jack Board (LINE IN/OUT) |
| S 402 | QSW2241 | Push Switch (Mode Selector) | J 5, 6 | QJA0453 | Microphone Jack |
| S 501 | SSG13 | Key Board Switch (Direction) | J 7 | QJA0267 | Headphones Jack |
| S 502, 503, 504 | QSWY207 | Duble Key Board Switch (REC/F.F./REW) | J 8 | QJS1955H | Remote Control Socket |

TERMINATIONS

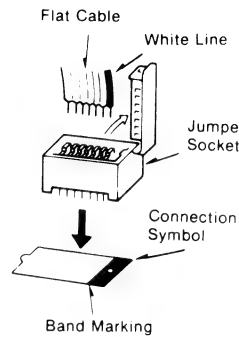


CONNECTORS



CONNECTION OF A FLAT CABLE

Connect the flat cable to the jumper socket so that the white line on the flat cable corresponds to the band mark side of the connection symbol (yellow or white symbol on the PC board) for the jumper socket. (This connection may differ from those for conventional models.)



NOTES (for Circuit boards)

- The circuit shown in [diagram] on the conductor side indicates printed circuit on the back side of the printed circuit board.
- All voltage values shown in circuitry are under no signal condition and playback mode with volume control at minimum position. For measurement, use VTVM.

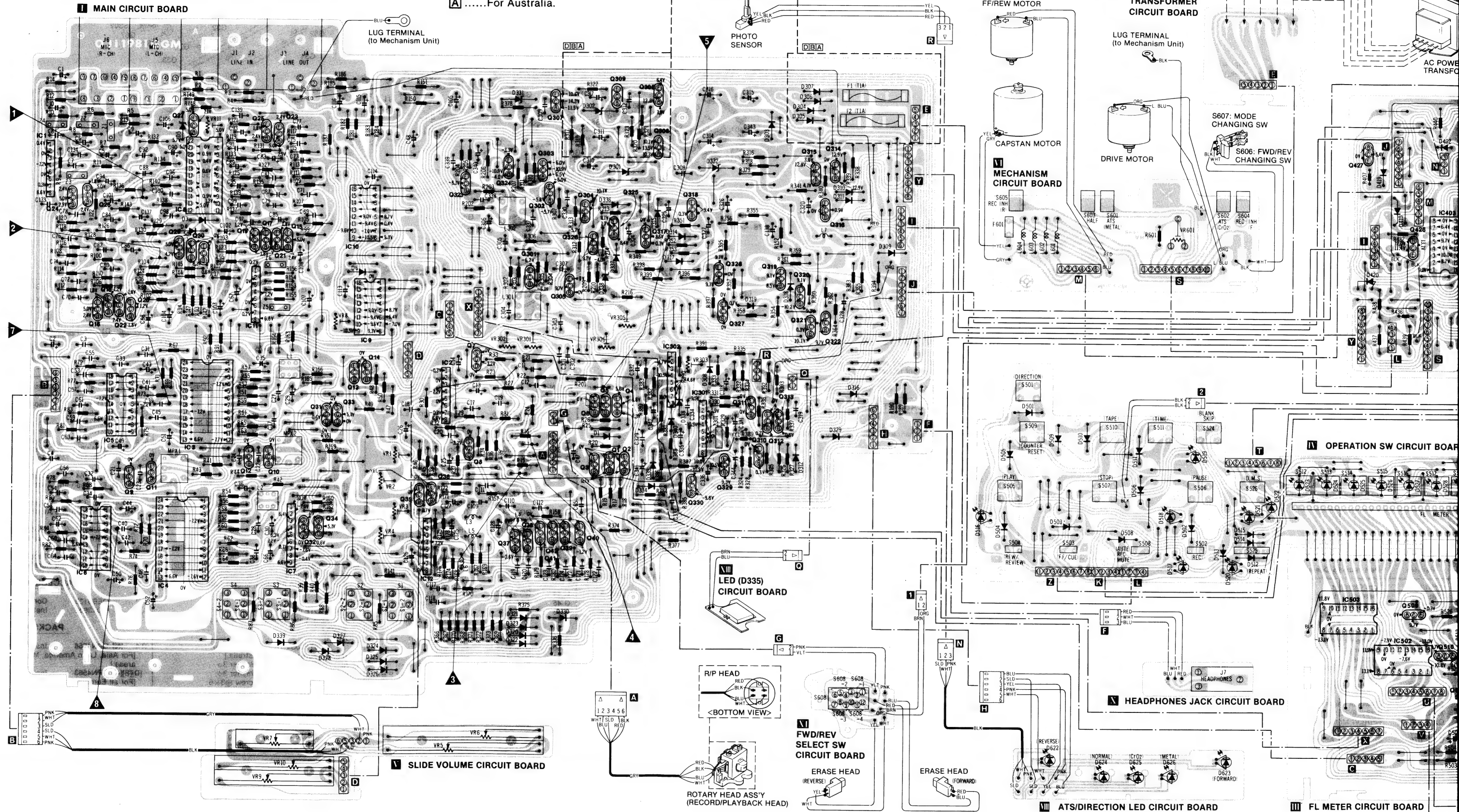
This circuit board diagram may be modified at any time with the development of new technology.

- NOTES:**
- | | |
|------------------------|----------------------|
| BLKBlack | ORGOrange |
| BLUBlue | PNKPink |
| BRNBrown | REDRed |
| GRYGray | SLDShield Wire |
| GRNGreen | VLTViolet |
| L. BLULight Blue | WHTWhite |
| NILNo Color Mark | YELYellow |

CIRCUIT BOARDS AND WIRING CONNECTION DIAGRAM

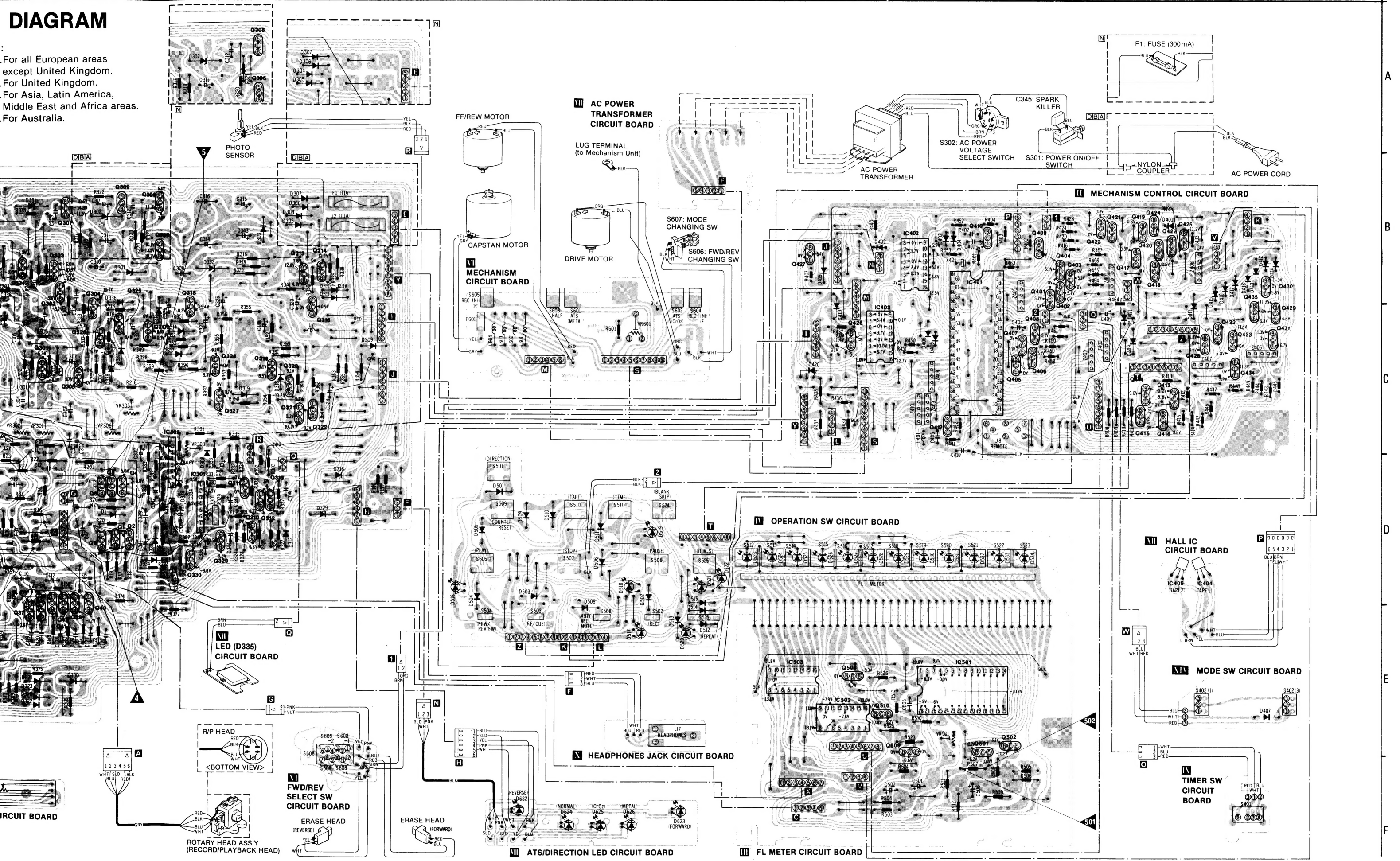
NOTES:

- D** For all European areas except United Kingdom.
- B** For United Kingdom.
- N** For Asia, Latin America, Middle East and Africa areas.
- A** For Australia.

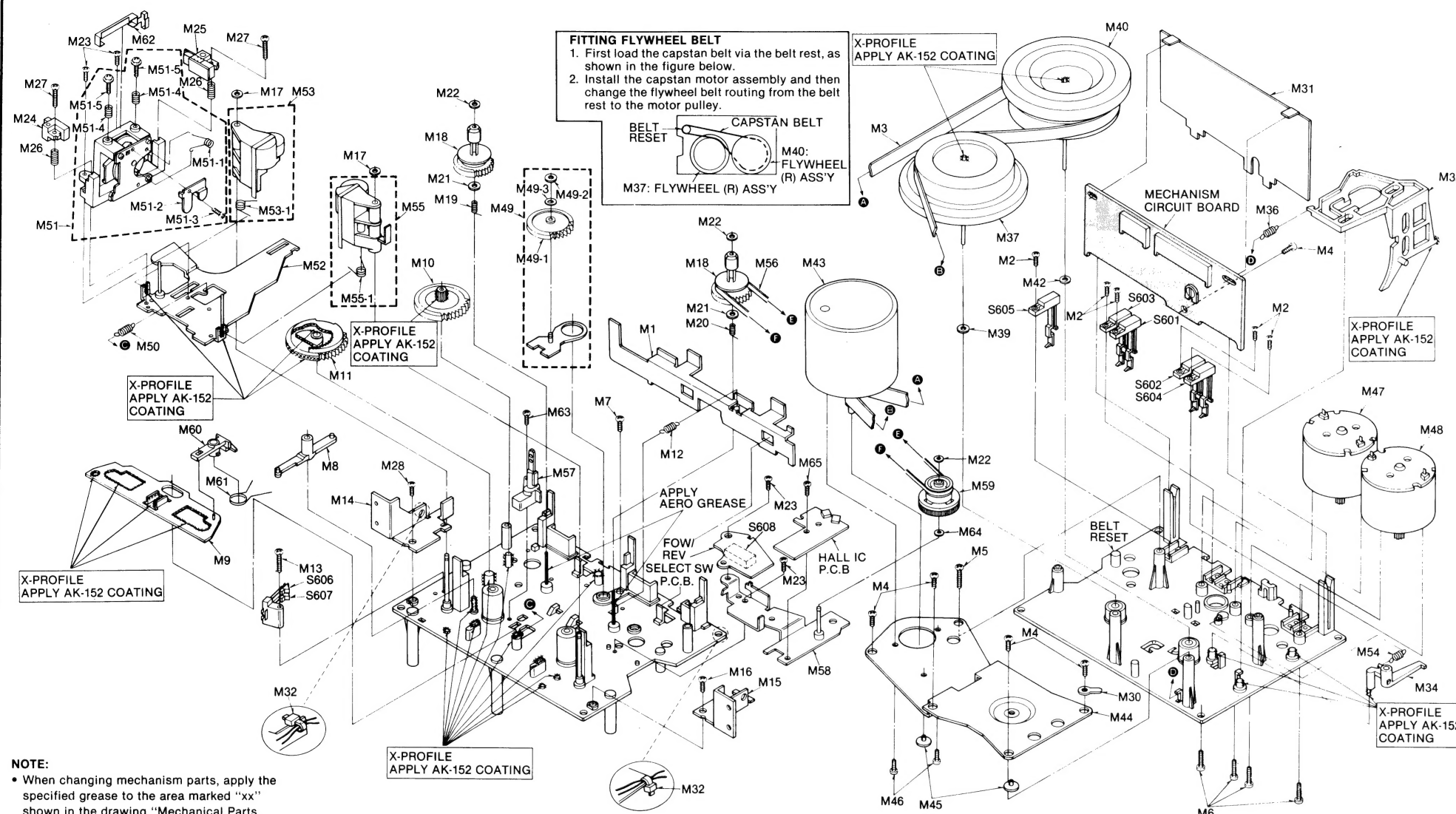


DIAGRAM

For all European areas except United Kingdom.
For United Kingdom.
For Asia, Latin America, Middle East and Africa areas.
For Australia.



MECHANICAL PARTS LOCATION



NOTE:

- When changing mechanism parts, apply the specified grease to the area marked "xx" shown in the drawing "Mechanical Parts Location".
- (AK-152, AERO GREASE) The grease and/or oil shown in the parentheses function to prevent friction (lubrication).

SPECIFICATIONS

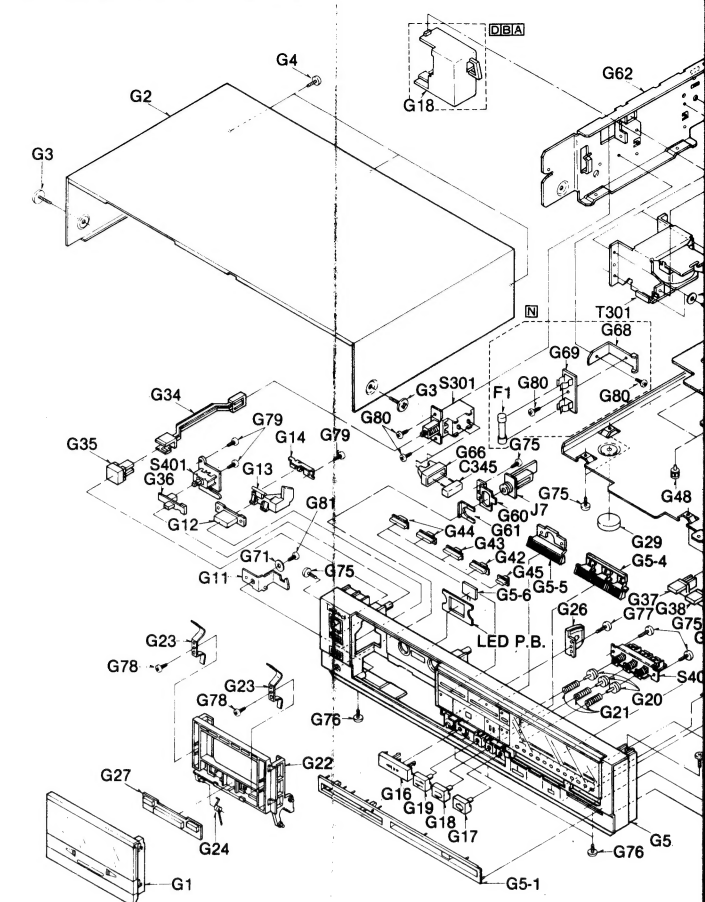
| | |
|--|-------------------------------|
| Pressure of pressure roller | 400±50g |
| Takeup tension * Use cassette torque meter.....QZZSRKCT | 50±10g-cm (FWD & REV mode) |
| Wow and flutter; (JIS) * Use test tapeQZZCWAT | Less than 0.1% (WRMS) |

REPLACEMENT PARTS LIST

| Ref. No. | Part No. | Part Name & Description |
|-------------------------|----------|---|
| MECHANICAL PARTS | | |
| M 1 | QMA4620 | Eject Angle |
| M 2 | XTN2+8B | Tapping Screw $\varnothing 2 \times 8$ |
| M 3 | QDB0347 | Flywheel Belt |
| M 4 | XTN3+8B | Tapping Screw $\varnothing 3 \times 8$ |
| M 5 | XTN3+22B | Tapping Screw $\varnothing 3 \times 22$ |
| M 6 | XSN26+10 | Screw $\varnothing 2.6 \times 10$ |
| M 7 | XTN3+6B | Tapping Screw $\varnothing 3 \times 6$ |
| M 8 | QML4025 | Change Lever |

| Ref. No. | Part No. | Part Name & Description | Ref. No. | Part No. | Part Name & Description | Ref. No. | Part No. | Part Name & Description |
|----------|-----------|--|----------|----------|---|----------|----------|--|
| M 9 | QXR0963 | Change Rod Assembly | M 32 | QTD1315 | Cord Clamper | M 51-1 | QBN1994 | Click Spring |
| M 10 | QDG1325 | Sub Gear | M 34 | QML4026 | Obstruction Lever | M 51-2 | QBP1993 | Head Thrust Spring |
| M 11 | QDG1309 | Main Gear | M 35 | QMR2097 | Eject Rod | M 51-3 | XTN2+4B | Tapping Screw $\varnothing 2 \times 4$ |
| M 12 | QBT2003 | Eject Angle Spring | M 36 | QBT1947 | Eject Rod Spring | M 51-4 | QBC1470 | Head Spring |
| M 13 | XTN2+14B | Tapping Screw $\varnothing 2 \times 14$ | M 37 | QXF0221 | Flywheel (R) Assembly | M 51-5 | QHQ1352 | Screw |
| M 14 | QMA4628 | Mechanism Angle-L | M 39 | QBW2116 | Washer (2.4 ϕ) | M 52 | QXK2855 | Head Base Plate |
| M 15 | QMA4627 | Mechanism Angle-R | M 40 | QXF0220 | Flywheel (L) Assembly | M 53 | QXL1654 | Pinch Roller Arm (L) Assembly |
| M 16 | XTN3+6B | Tapping Screw $\varnothing 3 \times 6$ | M 42 | QBW2117 | Washer (2.7 ϕ) | M 53-1 | QBN1992 | Pinch Roller Spring (L) |
| M 17 | QBW2046 | Washer (3 ϕ) | M 43 | QXU0331 | Capstan Motor Assembly (with Motor Governor P.C.B.) | M 54 | QBT1962 | Obstruction Lever Spring |
| M 18 | QDR1173 | Reel Table | M 44 | QMA4619 | Flywheel Holding Plate | M 55 | QXL1655 | Pinch Roller Arm (R) Assembly |
| M 19 | QBC1449 | Reel Table Spring-L | M 45 | QMZ1315 | Flywheel Thrust Retainer | M 55-1 | QBN1993 | Pinch Roller Spring (R) |
| M 20 | QBC1450 | Reel Table Spring-R | M 46 | XSN26+3 | Screw $\varnothing 2.6 \times 3$ | M 56 | QDB0253 | Pulley Belt |
| M 21 | QBW2012 | Washer (2.1 ϕ) | M 47 | QXU0332 | FF/REW Motor Assembly | M 57 | QZE0063 | End Sensor |
| M 22 | QBW2008 | Washer (2 ϕ) | M 48 | QXU0333 | Drive Motor Assembly | M 58 | QXA1432 | Magnet Pulley Angle |
| M 23 | XTN26+6B | Tapping Screw $\varnothing 2.6 \times 6$ | M 49 | QXG1076 | Center Gear Assembly | M 59 | QXP0632 | Magnet Pulley Assembly |
| M 24 | QWY2148YC | Erase Head (FWD) | M 49-1 | QDG1307 | Center Gear | M 60 | QML4078 | Switch Lever |
| M 25 | QWY2148W | Erase Head (REV) | M 49-2 | QBW2007 | Washer (2.5 ϕ) | M 61 | QBN2030 | Switch Lever Spring |
| M 26 | QBC1448 | Erase Head Spring | M 50 | QBH0151 | Spacer | M 62 | QMH2107 | Wire Clamper |
| M 27 | XSN2+18 | Screw $\varnothing 2 \times 18$ | M 51 | QBT1742 | Head Base Plate Spring | M 63 | XTN26+8B | Tapping Screw $\varnothing 2.6 \times 8$ |
| M 28 | QHQ1364 | Cup Screw | | | | M 64 | QBW2059 | Poly Washer $\phi 2.1$ |
| M 30 | QJT0015 | Lug Terminal | | | | M 65 | XTN26+4B | Tapping Screw $\varnothing 2.6 \times 4$ |
| M 31 | QTW1342 | Insulator Sheet | | | | | | |

CABINET PARTS LOCATION



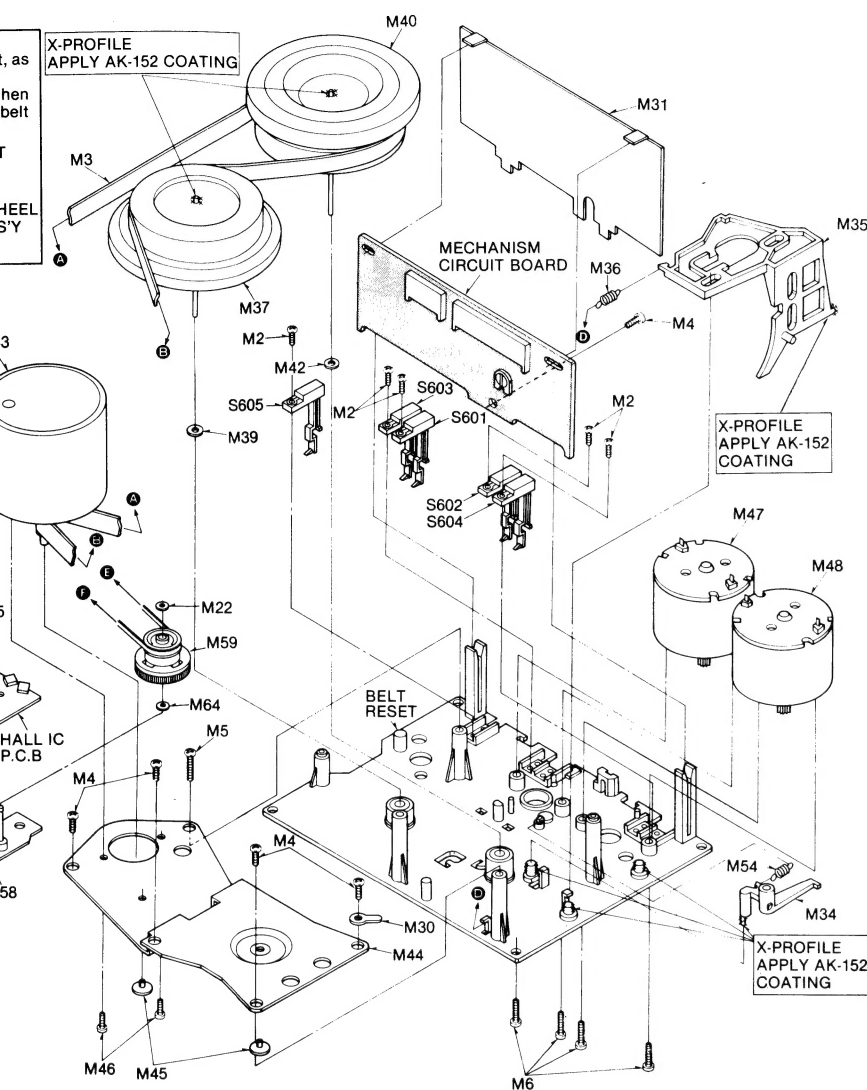
REPLACEMENT PARTS LIST

Important safety notice
Components identified by Δ mark have special characteristics important for safety.

When replacing any of these components, use only manufacturer's specified parts.

| Ref. No. | Part No. | Part Name & Description | Ref. No. | Part No. | Part Name & Description | Ref. No. | Part No. | Part Name & Description |
|----------------------|--------------------------|--|----------|--------------------------|--|----------|-------------------|-------------------------|
| CABINET PARTS | | | | | | | | |
| G 1 | [N] QYF0692 | Cassette Lid [For Asia, Latin America, Middle East and Africa areas.] | G 7 | QGL1190K "Black Type" | Meter Filter | G 27 | refer to D622-626 | |
| | [N] QYF0692K | Cassette Lid [For Asia, Latin America, Middle East and Africa areas.] | G 8 | QGG0227 | Slide Guide-A | G 28 | QGC1247 | |
| | "Silver Type" | | | QGG0229K | Slide Guide-B | G 29 | QKA1094 | |
| | "Black Type" | | | QGG0229K | Slide Guide-B | G 30 | QMA4645 | |
| | "Black Type" | | | QYT0657 | Slide Knob-A Assembly (Output/Balance) | G 31 | QKJ0609 | |
| | "Black Type" | | | QYT0658 | Slide Knob-B Assembly (Input) | G 32 | QKJ0661 | |
| | "Black Type" | | | QMA4626 | Holder Angle-L | G 33 | QMK2130 | |
| | "Black Type" | | | QGO2306 | Eject Button | G 34 | QMR2059 | |
| | "Black Type" | | | QML4063 | Eject Lever | G 35 | QGO2142 | |
| | "Black Type" | | | QBP2007 | Eject Lever Spring | G 36 | QGT1642 | |
| G 2 | QGC1245 | Case Cover | G 11 | QMA4626 | Holder Angle-L | G 37 | QGO2310 | |
| | "Silver Type" | | G 12 | QGO2306 | Eject Button | G 38 | QGO2311 | |
| | QGC1245K | Case Cover | G 13 | QML4063 | Eject Lever | G 39 | QGO2312 | |
| G 3 | QHQ1349 | Ornament Screw | G 14 | QBP2007 | Eject Lever Spring | G 40 | QGO2313 | |
| | "Silver Type" | | | | | G 41 | QGO2314 | |
| | QHQ1349K | Ornament Screw | | | | G 42 | QGO2307R | |
| G 4 | XTB3+8BFN | Tapping Screw $\varnothing 3 \times 8$ | | | | G 43 | QGO2307D | |
| | XTB3+8BFZ | Tapping Screw $\varnothing 3 \times 8$ | | | | | | |
| G 5 | QYP1212 | Front Panel Assembly | | | | | | |
| | "Silver Type" | | | | | | | |
| | QYP1212K | Front Panel Assembly | | | | | | |
| G 5-1 | QKG3467 | Ornament Plate | | | | | | |
| | "Silver Type" | | | | | | | |
| | QKG3467K | Ornament Plate | | | | | | |
| G 5-2 | QMF2327 | Button Retainer Plate | | | | | | |
| G 5-3 | QGO2344 | D.M.S ([1]-[12]) Button | | | | | | |
| G 5-4 | QGO2308 | Function Button | | | | | | |
| G 5-5 | QGO2345 | Counter Reset Button | | | | | | |
| G 5-6 | refer to D335 | Mechanism Illuminate L.E.D. | | | | | | |
| G 6 | QGL1190 "Silver Type" | Meter Filter | | | | | | |
| | [D][B][A] QJT1079 | Nylon Coupler | | | | | | |
| | QYF0627 | Dumper Gear Assembly | | | | | | |

CABINET PARTS LOCATION



REPLACEMENT PARTS LIST

Important safety notice

Components identified by Δ mark have special characteristics important for safety.

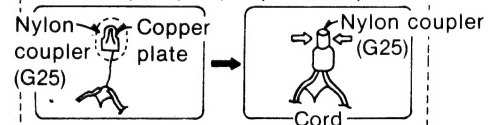
When replacing any of these components, use only manufacturer's specified parts.

| Ref. No. | Part No. | Part Name & Description | Ref. No. | Part No. | Part Name & Description | Ref. No. | Part No. | Part Name & Description | Ref. No. | Part No. | Part Name & Description | Ref. No. | Part No. | Part Name & Description |
|----------------------|-------------------|--|----------|---------------|--|----------|-------------------|--|----------|--|-------------------------|----------|--------------------|--|
| CABINET PARTS | | | | | | | | | | | | | | |
| G 1 | [N] QYF0692 | Cassette Lid [For Asia, Latin America, Middle East and Africa areas.] | G 7 | QGL1190K | Meter Filter | G 27 | refer to D622-626 | ATS/Direction L.E.D | G 63 | [D] Δ SJA88 | AC Power Cord | G 80 | XTN3+6B | Tapping Screw $\phi 3 \times 6$ |
| | "Silver Type" | | G 8 | QGG0227 | Slide Guide-A | G 28 | QGC1247 | Bottom Cover | | [For all European areas except United Kingdom.] | | G 81 | XTN3+10B | Tapping Screw $\phi 3 \times 10$ |
| | [N] QYF0692K | Cassette Lid [For Asia, Latin America, Middle East and Africa areas.] | | QGG0229 | Slide Guide-B | G 29 | QKA1094 | Case Foot | | [B] Δ QFC1205M | AC Power Cord | G 82 | XTN3+12B | Tapping Screw $\phi 3 \times 12$ |
| | "Black Type" | | | "Silver Type" | | G 30 | QMA4645 | Remote Control Angle | | [For United Kingdom.] | | G 83 | XTN3+8B | Tapping Screw $\phi 3 \times 8$ |
| | [D][B][A] QYF0702 | Cassette Lid [For all European and Australia.] | | QGG0229K | Slide Guide-B | G 31 | QKJ0609 | Nylon Rivet-A | | [N] Δ RJA52Z | AC Power Cord | G 84 | QTS1636 | Shield Plate-C |
| | "Silver Type" | | | "Black Type" | | G 32 | QKJ0661 | Nylon Rivet-B | | [For Asia, Latin America, Middle East and Africa areas.] | | G 85 | QMA4789 | Transformer Angle |
| | [D][B] QYF0702K | Cassette Lid [For all European areas.] | G 9 | QYT0657 | Slide Knob-A Assembly (Output/Balance) | G 33 | QMK2130 | Back Chassis | | [A] Δ QFC1208M | AC Power Cord | G 86 | QTD1315 | Cord Clamper |
| | "Black Type" | | | QYT0658 | Slide Knob-B Assembly (Input) | G 34 | QMR2059 | Power Switch Rod | | [For Australia.] | | G 87 | QTD1164 | Cord Clamper-A [For all European and Australia.] |
| G 2 | QGC1245 | Case Cover | G 10 | QYT0658 | Slide Knob-B Assembly (Input) | G 35 | QGO2142 | Push Button (Power ON/OFF) | | [D][B][A] QTD1129 | Cord Bushing | G 88 | QTD1322 | Cord Clamper-B [For all European and Australia.] |
| | "Silver Type" | | G 11 | QMA4626 | Holder Angle-L | G 36 | QGT1642 | Timer Switch Knob | | [For Asia, Latin America, Middle East and Africa areas.] | | G 89 | QKJ0598 | Switch Cover [For all European and Australia.] |
| | QGC1245K | Case Cover | G 12 | QGO2306 | Eject Button | G 37 | QGO2310 | NR Button-A ("C") | | [D][B][A] QBJ1425 | Cord Bushing | G 90 | [D][B][A] XTN3+24B | Tapping Screw $\phi 2.6 \times 4$ [For all European and Australia.] |
| G 3 | QHQ1349 | Ornament Screw | G 13 | QML4063 | Eject Lever | G 38 | QGO2311 | NR Button-B ("B") | | | | | | |
| | "Silver Type" | | G 14 | QBP2007 | Eject Lever Spring | G 39 | QGO2312 | NR Button-C ("OUT") | | | | | | |
| | QHQ1349K | Ornament Screw | G 15 | QJC0064 | Earth Plate | G 40 | QGO2313 | NR Button-D ("TAPE") | | | | | | |
| G 4 | XTB3+8BFN | Tapping Screw $\phi 3 \times 8$ | G 16 | QGO2309 | Direction Button | G 41 | QGO2314 | NR Button-E ("DISC") | | | | | | |
| | "Silver Type" | | | QGO2309K | Direction Button | G 42 | QGO2307R | REC Button (Red) | | | | | | |
| | XTB3+8BFZ | Tapping Screw $\phi 3 \times 8$ | | "Black Type" | | G 43 | QGO2307D | Auto Rec Mute Button (Yellow) | | | | | | |
| G 5 | QYP1212 | Front Panel Assembly | G 17 | QGO2315 | Mode Select Button-A (\odot) | G 44 | QGO2307H | F.F/REW Button (Gray) | | | | | | |
| | "Silver Type" | | | QGO2315K | Mode Select Button-A (\odot) | G 45 | QGO2346 | Repeat Button (Gray) | | | | | | |
| | QYP1212K | Front Panel Assembly | | "Black Type" | | G 46 | QTS1635 | Shield Plate | | | | | | |
| | "Black Type" | | G 18 | QGO2316 | Mode Select Button-B (for S301) (\rightarrow) | G 47 | QMA4613 | P.B Holding Angle-A | | | | | | |
| G 5-1 | QGK3467 | Ornament Plate | | QGO2316K | Mode Select Button-B (for S301) (\rightarrow) | G 48 | QKJ0608 | Tapping Support | | | | | | |
| | "Silver Type" | | | QGO2317 | Mode Select Button-C (for S301) (\rightarrow) | G 49 | QKJ0725 | Locking Support | | | | | | |
| | QGK3467K | Ornament Plate | | "Silver Type" | | G 50 | QKJ0725 | Locking Support | | | | | | |
| | QGC1473 | Button Retainer Plate | | QGO2317K | Mode Select Button-C (for S301) (\rightarrow) | G 51 | QTH1184 | Mic Cover | | | | | | |
| G 5-2 | QMF2327 | Button Retainer Plate | | "Black Type" | | G 52 | QTS1629 | Heat Sink | | | | | | |
| G 5-3 | QGO2344 | D.M.S (1)-(12) Button | | QGO2317K | Mode Select Button-C (for S301) (\rightarrow) | | | Shield Plate-B (for Mechanism Control P.B.) | | | | | | |
| G 5-4 | QGO2308 | Function Button | G 20 | QMB1429 | Button Bushing | G 53 | QSF0008F | FL Meter | | | | | | |
| G 5-5 | QGO2345 | Counter Reset Button | G 21 | QBC1473 | Button Spring | G 54 | QMK2100 | Operation Chassis | | | | | | |
| | | | G 22 | QYF0697 | Cassette Holder | | | | | | | | | |
| G 5-6 | refer to D335 | Mechanism Illuminate L.E.D | | "Silver Type" | | G 55 | QMA4741 | P.B Holding Angle | | | | | | |
| | | | | QYF0697K | Cassette Holder | G 56 | QMA4740 | Side Angle-R | | | | | | |
| G 6 | QGL1190 | Meter Filter | | "Black Type" | | G 57 | QKJ0683 | LED Holder | | | | | | |
| | "Silver Type" | | | QBP1925 | Holder Spring | G 58 | QMA4742 | Volume Angle | | | | | | |
| | | | | QBN1961 | Eject Spring | G 59 | QTS1625 | Shield Plate-A (for Slid Volume) | | | | | | |
| | | | G 25 | QJT1079 | Nylon Coupler | G 60 | QMA4614 | Headphones Angle | | | | | | |
| | | | G 26 | QYF0627 | Dumper Gear Assembly | G 61 | QMA4624 | Headphones Holding Plate | | | | | | |
| | | | | | | G 62 | QMA4679 | Side Angle-L | | | | | | |

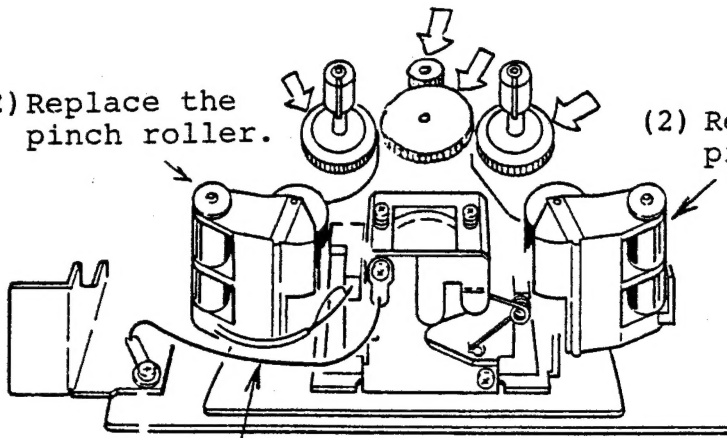
NOTES:

- [D]For all European areas except United Kingdom.
 [B]For United Kingdom.
 [N]For Asia, Latin America, Middle East and Africa areas.
 [A]For Australia.

Note: Cord connection using this nylon coupler (G25) requires a special tool.



| Part No. | Part Name & Description | Ref. No. | Part No. | Part Name & Description |
|----------|---|----------|----------|-----------------------------------|
| QTD1315 | Cord Clamper | M 51-1 | QBN1994 | Click Spring |
| QML4026 | Obstruction Lever | M 51-2 | QBP1993 | Head Thrust Spring |
| QMR2097 | Eject Rod | M 51-3 | XTN2+4B | Tapping Screw $\phi 2 \times 4$ |
| QBT1947 | Eject Rod Spring | M 51-4 | QBC1470 | Head Spring |
| QXF0221 | Flywheel (R) Assembly | M 51-5 | QHQ1352 | Screw |
| QBW2116 | Washer (2.4 ϕ) | M 52 | QXK2855 | Head Base Plate |
| QXF0220 | Flywheel (L) Assembly | | | Assembly |
| QBW2117 | Washer (2.7 ϕ) | | | Pinch Roller Arm (L) |
| QXU0331 | Capstan Motor Assembly (with Motor Governor P.C.B.) | M 53 | QXL1654 | Assembly |
| QMA4619 | Flywheel Holding Plate | M 53-1 | QBN1992 | Pinch Roller Spring (L) |
| | | M 54 | QBT1962 | Obstruction Lever Spring |
| | | M 55 | QXL1655 | Pinch Roller Arm (R) |
| | | | | Assembly |
| QM21315 | Flywheel Thrust Retainer | M 55-1 | QBN1993 | Pinch Roller Spring (R) |
| XSN26+3 | Screw $\phi 2.6 \times 3$ | M 56 | QDB0253 | Pulley Belt |
| QXU0332 | FF/REW Motor Assembly | M 57 | QZE0063 | End Sensor |
| QXU0333 | Drive Motor Assembly | M 58 | QXA1432 | Magnet Pulley Angle |
| QXG1076 | Center Gear Assembly | M 59 | QXP0632 | Magnet Pulley Assembly |
| QDG1307 | Center Gear | M 60 | QML4078 | Switch Lever |
| QBW2007 | Washer (2.5 ϕ) | M 61 | QBN2030 | Switch Lever Spring |
| QBH0151 | Spacer | M 62 | QMH2107 | Wire Clamper |
| QBT1742 | Head Base Plate Spring | M 63 | XTN26+8B | Tapping Screw $\phi 2.6 \times 8$ |
| QXV0195 | Rotary Head Assembly (Record/Playback Head) | M 64 | QBW2059 | Poly Washer $\phi 2.1$ |
| | | M 65 | XTN26+4B | Tapping Screw $\phi 2.6 \times 4$ |

| | | |
|--|--|------|
| Nr.: 318 | Datum: 25. Februar 1985 WK/MM | 4/85 |
| THEMA | TEXT | |
| RS-B 58 R RS-B 78 R Statik-Geräusche | <p>Symptom: Beanstandung von lauten Knackgeräuschen bei Wiedergabe im Abstand von 3 - 10 Minuten oder Knistergeräuschen.</p> <p>Grund: Während z.B. der Heizperiode oder geringer Luftfeuchtigkeit kann es vorkommen, daß laute Knackgeräusche bzw. ein Knistern hörbar wird bei der Wiedergabe. Statische Aufladung bzw. Entladung entstehen beim Bandtransport:</p> <ul style="list-style-type: none">a) A/W-Kopfb) an der Bandandruckrollec) Vermittlungsrädchen <p>Abhilfe: 1. Lt. Skizze eine Drahtverbindung herstellen.</p> <p>2. Erneuerung der Bandandruckrolle durch die geänderte Version ET-Nr. pinch roller links QXL1809 pinch roller rechts QXL1808</p> <p>3. Fetten der Vermittlungsrädchen ET-Nr. QZZ0118</p> | |
| Zu Nr. 2 pinch roller links QXL1809 pinch roller rechts QXL1808 Zu Nr. 3 QZZ0118 | <div style="text-align: center;"></div> <p>(1) Add the Lead wire</p> <p>(2) Replace the pinch roller.</p> <p>(2) Replace the pinch roller</p> | |
| Panasonic Service Deutschland GmbH | | |